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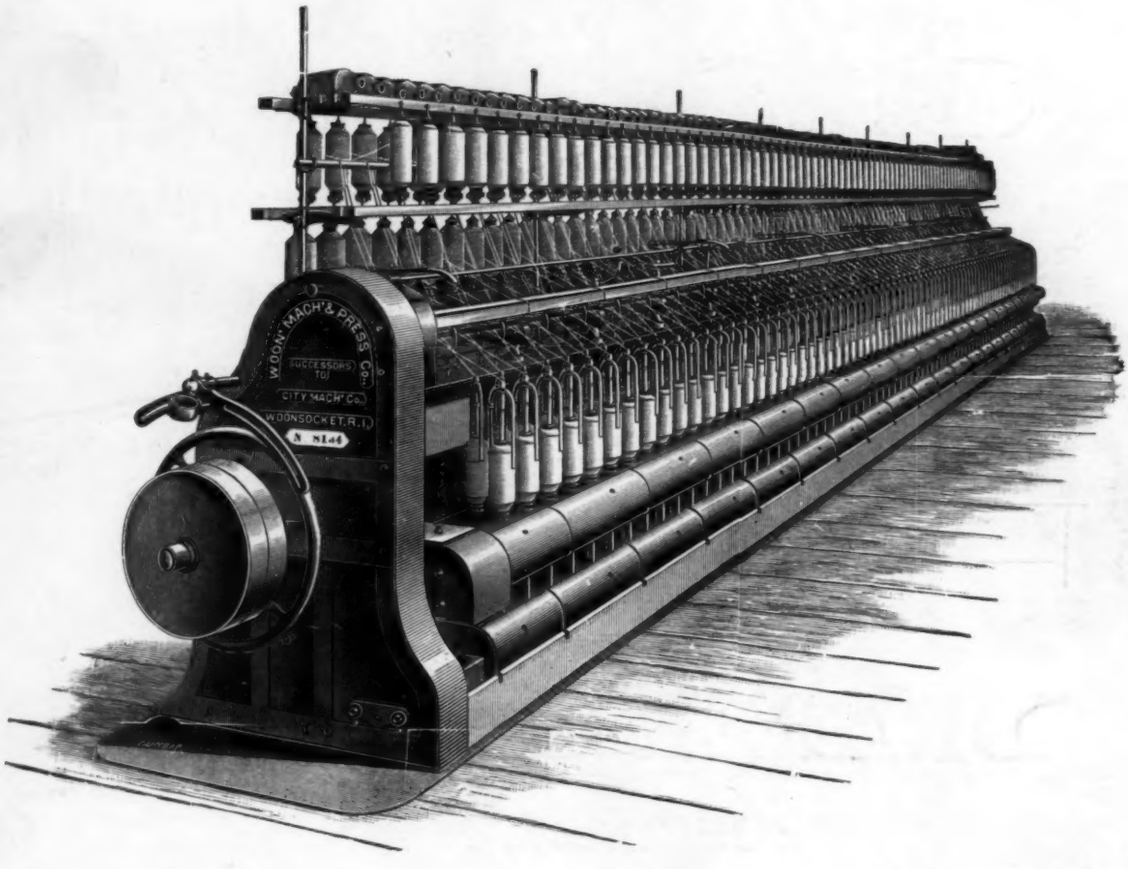


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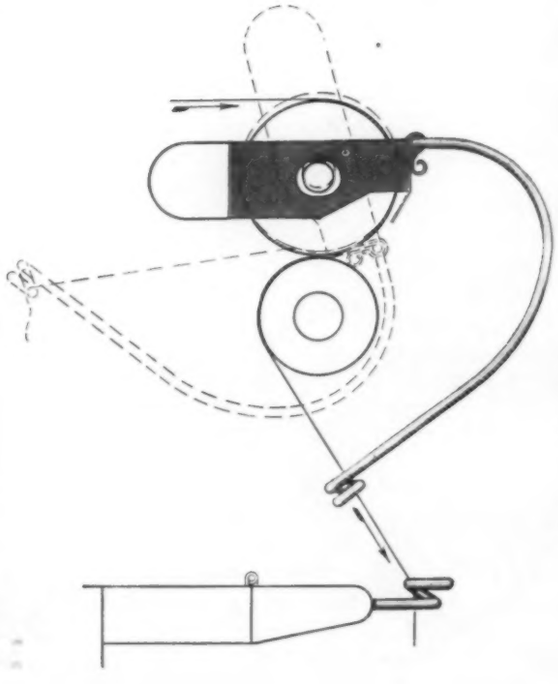

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# COTTON

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## THE JAPANESE INVASION.

From time to time for several years past, the subject of the Japanese invasion has been forced into the front pages of the daily press. War and rumors of war have been advanced by some and refuted by others. One of our noteworthy naval heroes has professed to see the hand writing on the wall in fearsome letters of fire. This invasion, however, is not militant in its character, but industrial. It is not a question of bullets and blood. It is a question of business and brains. The invasion has not affected our own country, but it is materially effecting some of our important foreign markets.

This invasion of the Oriental markets by the Japanese textile manufacturers is just dawning on the textile interests in this country. For three years, the Japs have been laboring day and night to secure control of the Chinese textile trade and not only have they ruined the market for American goods in the Orient, but the prospects of regaining this market for the American manufacturer are rapidly diminishing. They are a people of great industry and when they take up a particular line of effort they strive hard to accomplish their end.

After the Russia-Japan war had been disposed of, the Japanese invaded China and a neutral territory in behalf of the manufactured products of Japan. An enormous market was very soon created and from this general market one particular department that stood out as most conspicuously promising was the textile field. The great Japanese firm Mitsui Busaan Kaisha established a branch of their textile business in Manchuria and Korea and today they absolutely control the textile situation in those sections of the Orient. They built up their Chinese business very largely with American fabrics so that this activity was entirely agreeable to American export interests.

For a year or two the Japs were contented to handle American goods so long as they controlled the situation, but, in 1908, when the prices of fabrics were advanced and raw cotton began to climb, they looked for another source of supply. They did not look beyond their own boundary lines! The great export and import house of Mitsui & Co. established a New York branch with about a hundred department managers and employees and particular effort was made to secure exclusive export privileges for American textile machinery to China and Japan. In other words, they sought to control the manufacturing end of the industry in the Orient through their New York house and they succeeded to a very large extent.

Common or plain looms were first exported to Japan and the results proved very satisfactory and now there is a very general inclination to install the more modern American made machinery, including the automatic looms. A number of sample and trial lots of automatic looms have been shipped by Mitsui & Co., to Japan and thus far every report from the Japanese manufacturer has been very favorable and indicative of further orders.

Several large mills are under construction in Japan and

already orders are being placed for the most modern American machinery and automatic looms. Recently the manager of one of the new mills under construction visited this country and placed tenders for the complete equipment of the first unit of the plant which will include 25,000 spindles with the necessary preparatory and finishing machinery.

It is in this invasion of the Oriental textile market by the Japanese, that the American manufacturer has the greatest source of alarm. Japanese cotton mills equipped with modern American machinery and operated by skilled managers, as we all must admit the Japs are, will have the advantage of very cheap labor, much longer hours of operation and a broad limitless market for their goods. Raw cotton will cost them but a very small premium over the cost to an Eastern interior mill and this additional cost for the raw commodity will be entirely absorbed by the greatly reduced cost of manufacture.

It will be a number of years before they can manufacture any thing but the coarse counts, but eventually they will be able to spin the medium counts and then the finer counts will be the final step. A generation or two ago the Eastern manufacturer declared that Southern mills could never manufacture anything but coarse goods. Today, fine counts are being spun all over the South, and New England fine goods manufacturers are beginning to see formidable competition arising from their Southern friends.

Japan is a great country. Her people are as progressive as Americans and unless we make some radical moves the day is not far off when she will absolutely control the textile situation in the Orient and America will have to bid adieu to her Chinese and Japanese export trade.

But we are not going to lose this very valuable and resourceful Oriental market! Our cotton manufacturers and our selling agents are awakening to the critical conditions developing in that part of the world and decisive action is about to be taken. The Dukes, of tobacco fame, are becoming large owners of cotton spindles and looms in the Southern states, particularly in the Carolinas, and it is largely the class of fabrics that these mills manufacture that have made up the Oriental export trade.

If the Dukes will adapt the same selling methods for cotton fabrics that have been so successfully used in the selling of tobacco products by the American Tobacco Co., we shall not lose our market in the Orient. The American Tobacco Co., and the Standard Oil Co., were two gigantic corporations for manufacturing and selling commodities similar in demand to textile fabrics and they have established depots or branches all over Japan and China for the sale of their products under brand names and in this way they have created the broadest kind of a market for their goods.

This same system of distribution can be applied to textiles. Direct representation or branch houses can be established in the larger cities of China for the merchandizing of our fabrics under "brands" and in this way we can regain our share of the lost Oriental trade. The larger export houses in New York and Boston are investigating this field and it will not be long before definite and concerted action will be taken to regain our Far Eastern markets. The opening of the Panama Canal will give this action added impetus and any plan for the future, to be entirely successful, must of necessity include the establishing of branch houses in and direct shipments from our Southern seaport cities.

## POLITICS OR PROSPERITY?

The greatest single industry in the South is dangerously near disintegration. The same is true of cotton manufacturing throughout the country and any tampering with the tariff at the present session of congress would further disturb conditions which are already tense. It is to be hoped that the friends of Mr. Underwood will call upon him and outline the situation and if it is in their power, induce him to act in a way not likely to disturb business any more than possible at the present time.

We are importing approximately eighty million dollars worth of textiles annually, while the exports are practically nothing. This shows that the present protection is not too great, to say the least. In his speech before the Southern Commercial Congress here in Atlanta, the President stated that he looked for the special session to speedily pass the Canadian bill before proceeding to any other business, "if it is deemed wise or necessary to take up any other business." Doubtless the country is in accord with the President to this extent and would depreciate any further agitation on the tariff at this session. The President also expressed his regret that Congress did not authorize a tariff board, and because that bill was defeated he has strengthened the commission which he was authorized to appoint by adding two members, one of whom is a Georgian.

By December next this commission is expected to make a report which should be worth a great deal in framing future tariff legislation. It does not matter whether any bills which might be passed in the extra session are good or not, any agitation of the tariff at this time, would be practically sure to seriously interfere with business of all kinds throughout the country.

The splendid appointments of Southern men already made and the suggestion of a continuance of like favors to this section of the country, may not be inspired by the spirit of fairness and justness to this section wholly, but may be a slap at some of the old line Republican states for going over to the Democratic column and used as a whip to bring them back into line.

Tampering with the tariff at the extra session by the Democrats, who alone can accomplish anything, would be a very poor political move and almost sure to bring the old Republican states back into line. On the contrary, if the Democrats show wisdom in these matters and refrain from impulsive foolishness the chances for the party are better than at any time in the memory of the younger voters. There is undoubtedly a strong demand for a revision of the tariff downward, but any changes in the cotton schedule should be made with great wisdom and caution and only after a scientific and thorough investigation.

The new speaker of the House of Representatives in a speech made immediately after his formal election to the speakership said: "We are this day put upon trial and the duty devolves upon us to demonstrate, not so much by fine phrases as by good works, that we are worthy of the confidence imposed on us by the voters of the land and that we are worthy of their wider confidence."

It would seem that there could possibly be no better way for Congress to show its real merits and worth at the present time, than to hold off from their avowed intention to club the textile industry, in view of its present prostrate condition and the fact that it is tottering on the brink of disaster.

# GEORGIA INDUSTRIAL ASSOCIATION.

The eleventh annual convention of the Georgia Industrial Association was held at Warm Springs, Ga., on the 15th and 16th of June. The meeting was well attended and a great deal of interest expressed by the members in the various subjects that were brought up on the program. On the evening of the 14th a banquet was given by President Tuller and Secretary Johnstone to the legislative and executive committees of the association and to the various guests who had at that time assembled at the Warm Springs hotel to attend the convention.

THURSDAY MORNING SESSION.

At 10:50 a. m., on Thursday morning the meeting was called to order by President Charles D. Tuller of Atlanta. The invocation was asked by Rev. Mr. Wheat. The roll call and reading of the minutes were suspended by the vote of the members present.

The next feature of the program was the address of President Tuller who spoke in part as follows:

"Immediately after our last meeting at Brunswick, we were confronted with the introduction in the House and Senate of several measures that our association regarded as detrimental to the best interests of our industry and harmful to the general business interests of the entire state. The legislative committee, ably assisted by our secretary and treasurer, Mr. Johnstone, and with the efficient help rendered by the members of our association, succeeded in persuading the legislative members and senators that the proposed laws were not for the best interests of our state, as all of the measures we refer to failed to pass.

"The subject of labor and labor laws will come up for discussion at this meeting and I wish to mention that many of our very best people have formed a contrary opinion to what they have been led to believe on the subject of child labor in the cotton mills and we often meet voluntary statements to the effect that in the past the problem has been greatly exagerated by paid agents, who have visited our state or perhaps in some instances taken up their residence in our midst for the purpose of doing all the harm they can.

"At our last annual meeting the subject of cotton exchanges was dealt with quite largely and it is due for consideration again at this meeting, but I cannot refrain from commenting upon the remarks I heard at Richmond, Va., on the occasion of the annual meeting of the American Cotton Manufacturers Association when Arthur R. Marsh, president of the New York cotton exchange stated in effect the spinners have no right to do business direct on the exchange he represents. He was referring to the people who consume, pay for, and convert into yarn and cotton fabrics practically the entire American cotton crop, worth many millions of dollars annually. He also contended that this vast buying power should place all cotton transactions to cotton merchants or suffer the consequences.

"I believe that public opinion in America will very soon proclaim with the cotton spinners that if no rules are to be adopted by the New York cotton exchange to help give a fair deal to the consumer of the American cotton crop, that no good reason can be given why the New York cotton exchange should exist and therefore it will be abolished by the law makers of our country.

"Tariff Bulletin No. 1 has been issued by the tariff committee of the American Cotton Manufacturers Association, of which R. M. Miller is chairman. I beg to suggest that every cotton manufacturer obtain a copy of this bulletin and also arrange to secure additional numbers that are to follow Bulletin No. 1, so that all may be as fully informed as possible on this important subject that will doubtless engage the attention of our country for some months to come. I wish to urge our members to correspond with Mr. Miller and to stand ready to co-operate with him and his committee, who are acting with similar committees from the National Cotton Manufacturers Association and the Arkwright Club.

"Cotton mill mergers will undoubtedly prove the very best move that can be adopted by many of our mills, especially those who rank as rather small in comparison to some plants in the state. This subject is listed for discussion and will doubtless receive due consideration at this meeting. The lack of good solid co-operation among our mills is illustrated in the failure thus far to establish a general freight department, which I firmly believe would be of the greatest benefit to the mills. Intimate particulars concerning this work will perhaps come before our convention at this time; if so I urge each mill official to give the question careful consideration and offer their support if possible.

CHARLES D. TULLER, RE-ELECTED PRESIDENT.

"Every annual report by our former presidents for about four years, I believe, has been gloomy in reference to the mill business for the previous year, but it seems the conditions for the past year have been so unique that it falls to my lot to say very little on the subject, as I think all present are of the opinion that the present year is about the most disastrous one that we have in our experience. Our business is not prosperous. We have passed through troublesome times. Very high cost of material and high rates of wages, together with the low prices for manufactured products tell a story too well known to require further comment. I will

say however, that the mills are always glad and perfectly willing for the farmers of the South to obtain high prices for cotton. The Southern mill men especially have been a great factor in helping the farmer to obtain a better price for his cotton.

"The mills are also pleased to pay high wages to their operatives, provided of course their finished products can be marketed at a fair and reasonable margin of profit. When we consider the immense amount of capital invested in the American cotton mills, estimated at $700,000,000 with the consumption capacity of almost 5,000,000 bales of cotton annually, and when we think for a moment of the great army of men, who manage the affairs of the industry, men of the greatest financial ability, we cannot but utter words of praise for what they have accomplished and the world regards them as men of the greatest capacity. At the same time we must look at the facts in the case and put these men in a class that can only be described as foolish, because we are continually running our mills without profit for long periods on account of the lack of proper organization and for want of concentrated, hearty, full and free co-operation. For many years I have advocated organized effort to better our conditions. I now believe that we must make great strides and improve immediately along these lines or we will continue to suffer.

"I advocate something on the order of the commission form of government, or control, if I may be permitted to use these expressions to emphasize my meaning. I think the American mills should select five or seven textile commissioners, selecting the very best men in our great industry. They should be permitted to employ the best talent in America to gather information for the benefit of the mills. In this way we would have reliable authentic data, to aid us in forming intelligent opinion on all subjects pertaining to our business. We would then have data to counteract the bearish brokers' lists, that we are so often confronted with and the bearish trade reports that prove so often to be erroneous after the mills have pocketed unnecessary losses. We would have positive, undisputed facts on the subject as to our production and in as much as the curtailment of production at the right time is practically regarded by all as the best and only true remedy for substantial and lasting improvement we would under the advice of our commissioners be able to see the true state of affairs in time to properly and unitedly apply the remedy.

"When mill managers perfect the suggested information bureau for the exclusive benefit of the mills, a report from the commissioners in charge of the proposed organization would carry weight and influence to the presidents and treasurers of our mills, that proper remedies would be put in force to correct the difficulties that are pointed out to us, whether it be in regard to breaking the goods and yarn markets on ourselves, or whether it be the question of properly applying the curtailment plan in exactly the right time to accomplish what is desired.

"If it should cost a quarter of a million dollars annually to maintain the proposed department, the money would be well invested, as I believe it would save the American mill never less than $25,000,000 per year. This saving could be effected by only a small advance in the price of our products.

"I cannot close without highly commending your executive and legislative committee for their faithful work during the year and I also highly commend the secretary and treasurer for the faithful performance of his duties and take this occasion to thank both the committees and the secretary and treasurer for the work they have done."

President Tuller then announced the following committees: Resolutions committee, G. Gunby Jordan, chairman; Frederick B. Gordon and B. S. Walker; Committee on Nominations, J. L. Hamilton, Dr. Jeff Davis, and B. R. Blakely. He also announced an auditors committee.

The next feature of the program was the address by Capt. Ellison A. Smyth, president of the American Cotton Manufacturers' Association. At least fifty interested cotton manufacturers were present to listen to the interesting address by Capt. Smyth, which was entitled "The Present Conditions of the Cotton Mill Industry."

ADDRESS OF CAPTAIN ELLISON A. SMYTH.

"For over a year past," said Captain Smyth, "any meeting of cotton manufacturers for conference has taken on a funereal aspect. But we are keenly alive to the dangers that menace our industry, and many able brains have been seeking the solution of the problem, to rescue the cotton

CAPTAIN ELLISON A. SMYTH.

manufacturing business from the heavy losses that have beset us for many months. It has been found impossible to agree upon any positive line of action, because any agreement among manufacturers could be construed as a restraint of trade under the Sherman anti-trust law, and our farmer friends are very sensitive of any attempt on the part of buyers of cotton to curtail consumption, or lower the price. As Southerners, we rejoice in the prosperity that has come to the agricultural portion of our country, by the advance in the price of cotton, and our farmer friends are to be congratulated upon their wisdom and skill in feeding the market gradually with cotton, and maintaining the high price for cotton for which they have labored, but while this prosperity has attended the cotton producer, it has wrought havoc among the ranks of the manufacturers.

"There are more farmers making cotton than there are manufacturers making that cotton into cloth, and yet our farmer friends have been able to combine, and get together

in the matter of price and time of selling their cotton, while the manufacturers have been prevented, for several reasons—none of them valid or strong, but yet active and potent—from maintaining a price for goods that would show a reasonable profit for the manufacturer. Perhaps the real reason has been the weak financial condition of many of the Southern cotton mills. The practice in the South has been to under-capitalize their plants, and to start up a cotton mill with a very heavy indebtedness, which had to be provided for by borrowing money, and it has been remarkable the credit enjoyed by Southern cotton mill corporations in being able to finance their corporations, so that these heavy debts have, in many cases, been entirely wiped out, and a surplus created. This has taken extraordinarily good management, as well as extraordinarily good times, but a great many of the mills that have recently been built, have fallen upon evil times, and have been unable to secure the profits in manufacturing that the older mill corporations succeeded in securing. Too many of our Southern mills are in bondage to their commission houses, to whom they pay heavy tribute in large commissions, and the sale of their product is controlled by the commission house, at times against the judgment of the manufacturer, who is powerless to hold his goods and prevent a sale. Another trouble has been the lack of experience on the part of a number of manufacturers in making cotton cloth, and in understanding the cost of manufacturing. It has not been generally recognized by stockholders, directors and managers that a cotton manufacturer is running his machinery into cloth, that the life of the machinery is limited—generally to 15 to 20 years—and that, in addition to the fact that the manufacturer is using up his capital invested in machinery in this way, he is confronted by improvements in cotton mill machinery, and the fear that his neighbors and new competitors are buying the improved machinery, and are in position to manufacture goods at a less cost.

"The cotton manufacturer has also been menaced by unscrupulous manipulation of the cotton market by bold speculators on the cotton exchanges, and, for the last few years, the manufacturer has been at the mercy of men who never raised a pound of cotton, or manufactured a yard of cotton goods, and yet, by adroit manipulation, have been able to advance the market, or cause a decline of as much as three cents per pound within as many days. It seems almost impossible to control the gambling on the cotton exchanges, which has brought about so much loss and created such disaster, but the injuries received by the cotton mill industry by the manipulation of prices, often make one wish that the cotton exchanges were wiped out of existence, and it was forbidden by law to sell paper cotton that never was in existence, for future delivery, and the actual delivery of which was never contemplated.

"We were recently told by the able president of the New York cotton exchange, in his address before the Ameri-American Cotton Manufacturers' Association in Richmond, that the New York cotton exchange was organized by cotton merchants, for cotton merchants, and that the rules and customs were for the convenience of the members, and not for manufacturers or producers, and we are practically told that if we did not care to play the game according to their rules and regulations, we could keep out of their yard. As far as it goes, this is all right, and if we are not willing to play with the other boys in their yard, their game, according to their rules, our remedy would ordinarily be to keep away, but if the game played by the other boys is a public nuisance and dangerous to life and property, the aid of the police is called to stop what has become a public nuisance, and if the abuses of the exchange, which are a menace to the cotton trade throughout the country, are not ameliorated or regulated and controlled, perhaps the police will have to be called for.

"I very much fear that we have entered upon a period of competition among the mills themselves that will lead to the survival of the fittest, with disaster and loss confronting the stockholders. One remedy that is urged is the combining of mill plants under experienced management, the mills to be selected because of high standard physically and financially, with good records as to earnings, with the added strength of a financial bulwark that will make possible the carrying out of certain reforms in selling, in the opening of new outlets for goods, in increased efficiency, and the varied economies that are possible from combined purchasing and supervision. It would be impossible to combine a sufficient number of cotton mill plants that would in any way be considered a restraint of trade, or become a trust, but we have examples around us in the iron and steel trade, in the tobacco business, railroads and other lines, whereby a combination of a number of plants under conservative management have maintained values, the public has been better served, and investors, stockholders and creditors have been protected and benefitted. Efforts have been made for agreements as to curtailment, and we have been met with advice from our legal advisors that any such agreement entered into by a large number of men could be construed as a restraint of trade, and a violation of the Sherman anti-trust law, but where a certain number of mills are merged, or come together in one ownership, and under one control, the matter of agreement is waived, and there can be no violation of the anti-trust law, unless such a merger undertook to control the entire business.

"This is the argument of those who advocate mergers or the organization of a holding company that will control the operations of a certain number of cotton mills. This is, perhaps, cumbersome, and leads to the multiplication of offices to be filled, and salaries to be paid, and this plan is criticised by a minority of the stockholders in the different subsidiary corporations, who have not agreed to the transfer of their stock, and the only advantage that is admitted by the opponents of this plan is the possible ease in securing commercial capital, in the control of the selling of the product, and the control of the style of goods to be manufactured by the different corporations. The experiment is being made by three corporations in South Carolina, who have arranged for the merging of several mills, among them the Dillon, merging three mills; the Woodside, merging three mills; and the Parker, merging some eight or nine mills. The experiment will be closely watched, but already politicians are taking notice and interesting themselves to create prejudice and opposition on the part of both the farmers and the operatives. It has to be admitted, however, that there are too many men in the South selling goods and competing one with another. Too many men without any initiative, changing their constructions and constantly following any new departure made by more wide-

awake and progressive manufacturers, and too many financially weak corporations in bondage to their commission houses.

"The present stagnant condition of the cotton manufacturing business, however, is not only a question of overproduction and the results of high-priced cotton, but we are also confronted by an under-consumption of cotton fabrics, and when the 40,000,000 women in the United States stop wearing petticoats, and use only five yards of cloth to make a skirt instead of 12 to 15 yards, and where no sleeves are worn, and they use no braid or trimmings on their skirts, then the braid mills suffer, the yarn mills suffer and the cloth manufacturers suffer, and it is to be devoutly hoped that the fashion pendulum will swing in the other direction, and that a larger demand will be made by women for the production of the Southern mills.

"In our South Carolina Association of Cotton Manufacturers, of which I have had the honor of being President since its organization six years ago, we have avoided almost entirely the social feature in our meetings, but we have tried to work together for our common benefit, and with a certain amount of success. We have our committee

FULLER E. CALLAWAY, RE-ELECTED VICE-PRES.

on coal buying, that buys coal for a majority of the mills in the Association, and at a very considerable saving to the members, and, in fact, the saving extends to all the other mills, because the price is generally known at which the coal has been bought. We have found it necessary, through an able committee on legislation, to carefully watch the Legislature, and, by prompt action, and a frank statement of conditions, to avoid harsh and unnecessary laws. In the matter of taxes, our committee attends annually the hearings before the State Board of Equalization, and have protected our mills to a very considerable extent from unjust treatment. Our traffic committee, aided by an able and efficient traffic manager, has been successful during the past year in winning our suit against the Southern, the Seaboard and the Coast Line Railways, before our State Railroad Commission, and later agreed to a compromise that reduced our rate to New York City, on which all our deliveries are based, by practically three to four cents per hundred pounds, and have a suit pending now against the Southern Railway before the Interstate Commerce Commission in the matter of coal rates from Tennessee to the Carolinas. We have also a committee on the sale of bagging and ties, and a committee on the sale of waste, both of which gather valuable information for the members.

"Some ten years ago, six cotton manufacturers in South Carolina engaged a traffic manager who had been connected with the railroad service for years. This gentleman, George W. Forrester, has always been located in Atlanta, and he is in daily and intimate touch with the railroad officials. This traffic department has grown until today Mr. Forrester is traffic manager of the South Carolina Association, and his services are most valuable; last year he succeeded in securing reductions in rates to over six hundred points from South Carolina, besides checking every bill of lading for inward and outward freight, collecting overcharges, tracing lost shipments, and quoting rates on application promptly and within a few hours. I do not see how we could well conduct our business without the aid of a competent, efficient and active traffic manager.

"Our experience in Carolina has been that our Association is an active feature in preventing the "drumming" of help and interfering with each other's labor; in bringing about a better feeling among the manufacturers, due largely to the fact that their friendly intercourse, at least once a year; and more frequently on committees, and thus know each other. We have no dues in our Association, but each corporation is assessed for the expenses, as the necessity arises. So far, so good, but if our Association, through its executive committee, had the authority to order a curtailment, had some authority in the matter of prices for certain styles of goods as a basis, the benefits would be far greater. This, of course, is impossible as we are at present organized, but the time will come when, by the bitter experience that we are passing through now, men will be willing to yield their individual action to a certain extent for the benefits to be derived by general supervision and general control.

"I cherish the hope that we are passing through the dark hours before morn, that the financial sky will brighten, that so important a business as the cotton manufacturing industry of this country cannot permanently languish and become unprofitable, and that the stockholders will yet feel satisfied with their investments in cotton mills, and that the poor managers who have been turned grey and made faint by the experience of the past two years, will soon regain their strength and their good spirits and feel that everything has not gone permanently to the bad."

After the close of Capt. Smith's address, the secretary Mr. Johnston read a communication from Oscar Elsis, of Atlanta and two quotations from *Cotton Chats*, a little magazine published by the Draper Company, relating to the scarcity of cotton mill labor in the Southern states. Discussion on this subject followed: T. H. Rennie, President of the Pell City Mills opening the discussion, which was then taken up by G. Gunby Jordan, H. P. Meikleham, F. B. Gordon, and Capt. Ellison A. Smyth.

THURSDAY AFTERNOON SESSION.

Promptly at 3 p. m., Dr. Jeff Davis, chairman of the legislative committee, read the report of the committee, which was accepted by the association. Frederic B. Gordon of

Columbus, took part in the discussion which followed the reading of this report. The next feature of the program was the report of the executive committee by its chairman H. P. Meikleham who spoke in part as follows:

Legislative matters, during the sitting of the legislature, have demanded and received our attention where they were detrimental to our interests. We desire here to thank all the members of the Association for their co-operation at home, or with their immediate representatives in the Senate and the House in assisting to defeat the proposed vicious legislation and this so far we have accomplished.

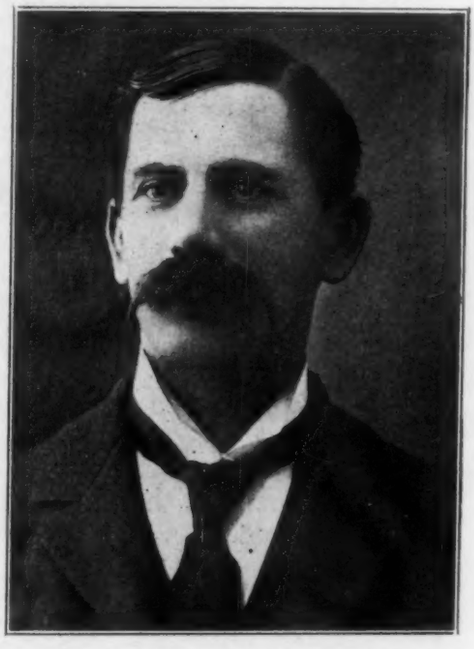
In our effort to get up statistical matter of the cotton mills in Georgia concerning the capacity and the character of their production, with a view of giving out information to the members of the association, to guide them in the character of the goods most advantageous to make and sell, we have not met with that degree of success we expected and this is owing largely to the indifference of many of the mills in not carefully filling out the blanks and reporting. Certain of them declined to give information of the character required and necessary to make the plan a success, though we have done all in our power along this line. Some discussion was had on this report in which Mr. Gordon of Columbus, took the leading part. After the discussion the report was ordered accepted.

The next feature of the program was the address by Samuel T. Hubbard of New York City on "Evolution in Business Methods." Mr. Hubbard gave a brief resume of the history of the cotton business as he had seen it since his boyhood days and led up to the founding of the New York cotton exchange. He emphasized the fact that all rules and regulations on this exchange were drawn to preserve to the trade the right to contract for selected cotton with selected persons. It is this feature he said which is not understood; the exception was deliberately made for the express purpose of allowing to the individual member this priviledge. In transactions with his fellow members, he is obliged to trade with any member in the same undescribed cotton of which the crop may be composed because the contract must represent, as near as possible, all the grades brought to market daily, throughout the South. "I believe the time is not far distant," continued Mr. Hubbard, "when despite the laws against this hedging by planters when the farmer may be considered as much of a speculator, when he does not hedge a portion of his growing crop at a profit as a spinner is today who sells his yarn ahead in the summer time and does not hedge himself in the future market. A great complaint is heard that the system is not perfect because it does not offer a complete hedge, which is quite true. If it were possible to completely hedge all business transactions there would be no risk in business or in raising crops. The only perfect insurance I know is life insurance where you must die to win and even then there is a doubt as to what the most solvent company will actually pay your widow if widow you have.

"Nevertheless with all its disadvantages, with all its imperfections, it is a distinct step forward in the commerce of the world and so regarded by all political economists, led by Prof. Hadley of Yale whose text book is found in every college. When the manufacturer hedges his requirements through this system, he hedges the selected cotton he needs by the undescribed cotton of the crop. He takes the same risk as does the merchants who would sell him the selected cotton and he deliberately takes this action for the purpose of not paying the higher price the merchant asks. In other words he becomes a merchant himself, expecting to make a profit and disgusted if he miscalculates the basis. "To the South of us lie markets which we should supply," continued Mr. Hubbard, "the next evolution in the spinning trade will be found in exploitations of these markets by the Southern spinners. They will go personally to Cuba, Venezuela, Brazil and the Argentine as do the European manufacturers, to see for themselves the style of goods those countries want and the price they can and will pay, and learn to make what they wish to wear at a price that will compete with Europe. There is no escape from this evolution and he who would be in the movement must start early."

At the close of Mr. Hubbard's address there was considerable free discussion in which Capt. Smyth, Mr. Hubbard, Mr. Gordon, and others took part.

The report of the secretary and treasurer was read and accepted. Then came a period of general discussion, the principal subject of which was "Do the Cotton Mills of Georgia Need a Freight Bureau." This discussion was finally determined by a motion from Mr. Miekleham which



HAL. L. JOHNSTON, SEC. & TREAS.

was afterwards embodied in a resolution to the effect that the subject of a rating agent be placed in the hands of the executive committee with instructions to act in the matter according to their judgment and to sub-divide the cost of such a department among the several mills who had expressed a willingness to join in this movement, in a fair and equitable manner.

FRIDAY MORNING SESSION.

At 10:50 o'clock Friday morning, President Tuller again called the meeting to order and introduced G. Gunby Jordan, of Columbus, who delivered a very interesting address on "Industrial Education." Lack of space at this time prevents us from presenting this address, but in the interest of our readers, we shall probably furnish same in full in an early issue of COTTON. Mr. Cook, of The Southern Combing Gin Co., of Rossville, Ga., gave a short talk on the

subject of ginning cotton by the combing method and distributed pamphlets showing cuts of this gin and testimonial letters from various users.

The secretary read the report of the committee on excess tare which was listened to with a great deal of interest. Oscar Elsas, the chairman of this committee, was unable to be present. Among other points brought forth in this report was a series of calculations on actual experience for the season of 1909 and 1910. This concrete problem showed 19,359 bales used, of which amount 14,267 bales were compressed and 5,092 bales were flat. Under the rules of the Carolina mills the tare permissable on compressed cotton is 24 pounds and on flat cotton 22 pounds. In this concrete problem the mills where the test from which the basis was made, allowed one pound extra before making a claim. A large number of bales that had 25 pounds tear per bale they did not have claim for. They did this to be sure that any error of weighing was fully compensated for.

JEFF DAVIS AND G. GUNBY JORDAN.

Out of the 14,267 bales that were compressed, 1,555 bales carried 4,101 pounds of excess tare, or an average of 2.63 pounds per bale, valuing this at 15 cents per pound, shows a loss of $615.15.

"Our observation showed that cotton from Oklahoma arrived in the best conditions as the bagging and ties used were evidently new. Our experience shows that the extreme West uses almost exclusively new covering, which had less incisions and consequently the lack of necessity for patching, thereby reducing loose cotton flying from the bales. The worst bales of cotton which were received came from a St. Louis shipper and we are under the impression that they control a number of compresses and therefore could instruct how their cotton was to be pressed and patched. Some bales carried several thicknesses of patching and in almost all cases the bagging was of a very poor quality, such as second-hand sugar bagging, heavy twills, etc., all of which was heavily patched. We receive some cotton from the Georgia compresses and we found the compressing very inferior to that of the Western compresses. They invariably use old bagging or sugar bagging for patching and the result is that the marks on the outside of the bale are almost illegable.

"Out of 5,092 bales of flat cotton we found 1,191 bales that carried excess tare to the extent of 3,057 pounds, or an average of 3.32 pounds per bale, which at 15 cents is equivalent to $593.55. From the above it becomes evident that on this complete lot of 19,359 bales the total of excess tare as described above amounted to $1,208.70. The expense incurred in accomplishing this saving was about half of the amount recovered." After some discussion by various members of the Association the meeting was adjourned until 2:15 p. m.

FRIDAY AFTERNOON SESSION.

Promptly at 2:15 p. m. President Tuller again called the meeting to order and asked that discussion be brought forth as to the subject of what steps be taken to improve the market conditions on cotton fabrics and yarns. T. H. Rennie, of Pell City, Ala., said that as he saw it, cotton manufacturers did not take enough profit. "They should charge a profit over the actual cost of the cotton," said Mr. Rennie, "and not figure too close on the probable cost, but make due allowance for some market changes and always remember to add the profit." Mr. Meikleham thought that this method was largely a gamble, the man who was lucky enough to buy his cotton right, being the man who would win in the end. He advanced the idea that in his opinion it would be much better to curtail and curtail at the right time, if successful manufacturing was to be expected. "There is too much running," he continued, "without knowing just what is being done."

Frederic B. Gordon, of Columbus Mfg. Co., said that was the mill end, but the selling end should be considered. "The time has come," he said, "when if the commission houses are to assist the mill they should get together and have an information bureau that will furnish definite information to the mills whenever they are so requested."

Lee Rodman, vice-president of the Indiana Cotton Mills, said that cotton manufacturers depended too much on someone else and they should know how to run their own selling end. "We stay too close to the mill," continued Mr. Rodman, "and should get out into the market and know what we are doing."

Mr. Meikleham then suggested that in view of Mr. Jordan's address on "Industrial Education" which he had listened to that morning, he wished to suggest that it might be a good idea to educate the young men of the country to be merchants. In his opinion the merchants of the country could not at the present time be classed as good ones and he thought that industrial education to educate the young man to become a successful merchant would go a long way toward preventing in the future, difficulties similar to those we are having at present.

G. Gunby Jordan said that he thought a fuller understanding among Southern manufacturers would be of considerable benefit. "They are all afraid the other fellow has something up his sleeve," said Mr. Jordan. "We curtail when we can't help it, but that is too late. We should curtail before the warehouse is full of goods and before every

person visiting the mill finds out that the warehouse is full of goods and so advertises it to the various buyers throughout the markets where we go to sell." In this idea lack of confidence on the part of the individual manufacturers was the primary cause of a great deal of the trouble which is now confronting the textile men in their business.

Following this discussion B. F. Walker read a short paper on cotton mill mergers in which he advocated to a certain extent the merging of small size mills. G. Gunby Jordan, H. P. Miekleham, F. B. Gordon and C. V. Truitt took part in the discussion which followed.

President Tuller then called upon Frederick B. Gordon to discuss the subject of liability insurance and workman's compensation. Mr. Gordon discussed this subject at considerable length and said that in the final analysis, he did not think that the State of Georgia was in a position to handle a liability act in as satisfactory a manner as some of the other States or Germany and that the paternalistic idea, was not in accord with American ideals. Under these conditions, he advised that liability insurance be carried in a good strong company, even at the advanced rate pending under the recent combination agreement.

At the close of Mr. Gordon's remarks, Lee Rodman, of the Indiana Cotton Mills, read a paper on "The Textile Manufacturers' Exchange." The Exchange is an organization on the plan of a central bureau, the office being in charge of a secretary. He is the only paid official of the organization. Each member of the Exchange is given a number, which is known only to the member and the secretary. The members report their sales, quotations, and offers declined in detail, giving width, construction, weight, price, terms, and delivery to the secretary. This information is classified and sent out to the members by the secretary, the transactions of each member being reported under his number. This arrangement preserves the confidential character of the report. No information is given or desired as to the name or location of the purchaser. These reports are issued each business day and enable the members to keep posted as to the volume of business moving and the prices ruling. The stock reports are issued every two weeks, the amount of unsold stock on hand being reported to the secretary, who consolidates the holdings. There was very little discussion following Mr. Rodman's paper, although expressions of interest were made by several members, among whom was President Tuller, Secretary Johnston, Mr. Gordon and Mr. Walker.

The committee on resolutions then reported and their resolutions were adopted unanimously by the Association.

The committee on nominations then read their report and the following officers were elected for the ensuing year: President, Charles D. Tuller; Vice-President, Fuller E. Callaway; Secretary and Treasurer, Hal L. Johnson; Executive Committee, H. P. Meikleham, chairman, of Lindale, Ga.; J. L. Hand, of Pelham, Ga.; J. A. Mandeville, of Carrollton; E. W. Swift, of Columbus, Ga.; and J. J. Spalding, of Atlanta, Ga. Charles D. Tuller, of Atlanta, and Fuller E. Callaway, of LaGrange, were also nominated as members ex-officio.

The nominations for the legislative committee were Dr. Jeff Davis, chairman, of Toccoa, Ga.; S. A. Carter, of Atlanta; F. B. Gordon, of Columbus, Ga.; B. S. Walker, of Monroe, Ga.; and B. M. Stalworth, of Gainesville, Ga. After the nominatios were made the officers were elected in a body by a rising vote, the election being unanimous.

The following mills were represented at the convention: Columbus Mfg. Co.; Crown Cotton Mills; Elm City Cotton Mills; Eagle & Phenix Mills; Exposition Cotton Mills; Elk Cotton Mills; Edwards Mills; Georgia Cordage Mills; Gate City Cotton Mills; Griffin Mfg. Co.; Henderson Mfg. Co.; Hutcheson Mfg. Co.; Hampton Cotton Mills; Jefferson Cotton Mills; Kincaid Mfg. Co.; Lanett Cotton Mills; Meritas Mill; Monroe Cotton Mills; Milstead Mfg. Co.; McIntosh Mills; Millen Mills; Mallison Braided Cord Co.; Mandeville Mills; Muscogee Mfg. Co.; Massachusetts Mills in Georgia; Palmetto Cotton Mills; Perkins Hosiery Mills; Riverdale Cotton Mills; Rushton Cotton Mills; Swift Spinning Mills; Strickland Cotton Mills; Scottdale Mills; Swift Mfg. Co.; Thomaston Cotton Mills; Toccoa Cotton Mills; Unity Cotton Mills; Unity Cotton Mill No. 2; Wahoo Mfg. Co., and West Point Mfg. Co.

Prominent among those present were: F. B. Gordon, Columbus; Geo. W. Hamilton, Dalton; C. V. Truitt, LaGrange; G. Gunby Jordan, Columbus; Chas. D. Tuller, Atlanta; M. C. Foster, Dalton; C. M. Candler, Decatur; Samuel A. Carter, East Point; I. P. Nichols, Griffin; A. J. Henderson, Hampton; C. L. Faulkner, Banning; Wm. Harris, Hampton; H. W. Bell, Jefferson; H. W. Barnes, Griffin; Geo. Harriss, West Point; J. T. Broadbent, Columbus; B. S. Walker, Monroe; B. T. Thompson and Guy Girard, Newnan; D. Gilfillen, Millen; L. F. Edwards, Athens; J. A. Mandeville and L. C. Mandeville, Carrollton; Edw. W. Swift, Columbus; H. P. Miekleham, Lindale; C. C. Crowell, Columbus; Geo. H. Lanier, West Point; B. R. Blakely, Griffin; Clifford J. Swift, Columbus; B. F. Strickland, Valdosta; Geo. B. Scott, Scottdale; Harry L. Williams, Columbus; S. Y. Pruitt, A. T. Matthews and R. E. Hightower, Thomaston; E. E. Mitchell and Jefferson Davis, Toccoa; H. C. Arnall, Sr., Sargent; Capt. Ellison A. Smyth, Greenville, S. C.; Thomas H. Rennie, Pell City, Ala.; Lee Rodman, Cannelton, Ind.; Philip Lanier, West Point, Ga.; Robert Freeman, West Point, Ga.; J. G. Truitt, LaGrange, Ga.; Howard Parks, of Converse & Co., New York; Clifton Corley, of the Corley Textile Specialty Co., Atlanta; Park A. Dallis, Mill Architect and Engineer, Atlanta; John M. Born, Merchants' and Miners' Transportation Co., Atlanta; L. L. Arnold, COTTON PUBLISHING COMPANY, Atlanta; George K. Hutchins, Columbus Power Company, Columbus, Ga.; C. M. Young, Superintendent of Power, Columbus Power Co., Columbus, Ga.; Ralph Webber, Saco-Pettee Machine Co., Atlanta, Ga.; Frank G. North, of the Barber-Coleman Co., Atlanta, Ga.; J. H. Johnson, of the Giegy-Ter Meer Company, Atlanta, Ga.; Vivian Guion, of the Corn Products Co., Greenville, S. C.; and H. O. Wilkinson of the Sanitas Co.

The official reporting for the convention was done by Edward Crusselle, of Atlanta, Ga.

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Failure to follow the advice of the consul has caused several prospects for the introduction of American goods to fail. Recently an American firm was advised to conduct correspondence in Italian with a Maltese merchant. When the letter arrived it was in English, and the catalogue was in Spanish. As the merchant spoke only a few words of English and not a word of Spanish, he threw away the letter and catalogue. This habit of some American shippers not only loses them trade, but causes the consul a loss of prestige and is harmful to American commercial interests.

# EGYPTIAN COTTON.*

## Method of Marketing the Crop—Nature of the Different Cottons Grown.

BY ARTHUR A. HASKRICK, BOSTON, MASS.

It seems but a short time ago that Egyptian cotton was to most American spinners a comparatively unknown article. The peculiarity of the various growths, the planting of the crop, the ginning and baling were all matters to which American spinners as a whole gave but little of their attention. Today, however, the situation has entirely changed and Egyptian cotton may be said to occupy here very much the same position as it does in England, and users have become quite familiar with the various growths which that country produces.

Anyone at all familiar with the subject, particularly if he has visited Egypt, cannot fail in being impressed with the method and system employed throughout, and this is particularly noticeable when compared with the usual cus-

FIG. 1. EGYPTIAN PRESSING CO., ALEXANDRIA, EGYPT.

tom of American cotton growers. It has often been suggested that Egyptian cotton could be grown in the United States, and in point of fact a few enthusiasts with the assistance of the Agricultural Department have planted the seed. The result obtained, however, had very little resemblance to the real thing, and whatever resemblance may have existed was to a large extent destroyed by the poor ginning and handling.

The success of the Egyptian cotton industry may be explained by the one word, *thoroughness*. England has done much for Egypt, and not the least of her achievements are to the improvement of the remarkable irrigation system, upon which everything depends, and the business-like methods established for the growing and trading in cotton. In Egypt we have a system which is complete. Mistakes, of course, are bound to occur but they are comparatively rare, and it must be borne in mind that many of the growers and head men are Arabs, who, as is well known, consider what we would term dishonest trading to be a perfectly legitimate thing, but there are provisions to guard against this, it is a part of the system, with the result that any dishonesty when detected is a very serious matter for the parties involved.

When the new crop is ready to come to market, the Alexandria General Produce Association determines upon a type out of the crop to be considered as "fully good fair," the basis for all transactions. The sample selected is divided, one portion being placed under glass in the rooms of the Association, which on no account must be taken out until the following year. Another portion is left open to inspection under special conditions. In the event of any dispute arising between the buyer and seller these samples may be referred to, and if an amicable arrangement cannot be arrived at, the matter comes up before the Board who give their decision, which is final. In case of any trickery on the part of the seller the conditions imposed are such that make it difficult for him to continue in business.

### GINNING AND PACKING EGYPTIAN COTTON.

A feature about Egyptian cotton is the uniformity of quality. This may be explained by following the system throughout from the beginning. In the first place large ginning factories have been erected at the important centers, being owned chiefly by different large shippers. The cotton is bought by these establishments in the seed from the surrounding districts and when a sufficiently large quantity of it has been secured, it is inspected in the factory yard and is there graded preparatory to ginning. Some of these factories have a production equivalent to about 300 Egyptian bales a day.

The gins are generally arranged in two rows, feeding inwards. When a batch of cotton is ready for ginning it is fed into all of them simultaneously and delivered onto trucks running on a railway between two lines of gins. It will be observed that the whole of this cotton, after being graded before ginning, which is important, receives a most thorough mixing by the manner in which it is delivered from the gins. From here it is taken to a press and put up in bales weighing approximately 800 pounds, but which are about twice the size of the regular shipping bales such as are received in America. These large, or country bales are brought to Alexandria by means of canal and here they are again examined, graded and classified. When a lot of several hundred has been made up, all of them are entirely opened and given a thorough mixing in the large apartments intended for that purpose in the buildings of the Egyptain Pressing Company.

The cotton is then ready for the final pressing. The number of bales resulting from this operation varies, but it generally consists of several hundred. The machines for the final pressing are rather formidable, being a combination of steam and hydraulic power; each is fitted with three bins, two of which are being filled with the loose cotton, while the third is under pressure. They are arranged to revolve so as to come under the press as required.

*Read before the National Association of Cotton Manufacturers.

Before the cotton is placed in the bin the covering is inserted, steam is then applied to the machine and when this has reached its extreme limit, eleven hoops are put on. A further pressure is then applied by hydraulic force, and this enables the attendants to buckle the hoops. The bales expand as the pressure is released, making the hoops absolutely tight. In this condition they are thrown down a shute, and with the exception of the ends, which have yet to be sewn on, they are ready for shipment. The capacity of a press of this description, running under favorable circumstances, is from 50 to 60 finished bales an hour. A good quality of burlap of uniform weight is used for covering purposes, so that the tare seldom varies from the fixed standard of 22 pounds.

Until a few years ago all of the final pressing was done in Alexandria, but of late years it has been found an advantage to have smaller establishments in the country, and there are several such now in operation which are mostly controlled by merchants who ship their cotton direct, and who do not offer it for sale in Alexandria, since steam pressed bales cannot be delivered against sales of contracts, except under very onerous conditions.

While it is admitted that the cost of baling is greater than that adopted in America, on the other hand there is a large saving in the matter of freight. Ships can take 10,000 or 12,000 bales of Egyptian cotton compared with

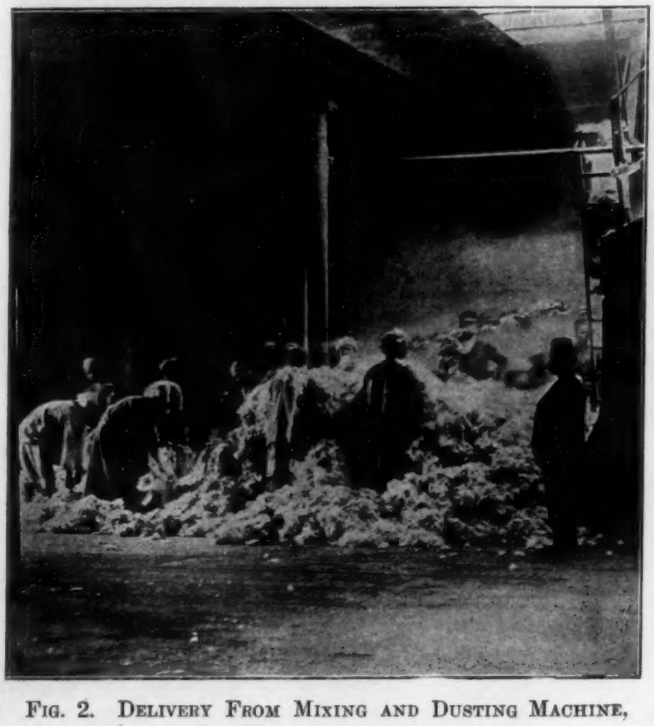

FIG. 2. DELIVERY FROM MIXING AND DUSTING MACHINE, AT THE EGYPTIAN PRESSING CO.

from 6,000 to 8,000 bales of American cotton, although, according to the ratio of weights, they should take 14,000. There is practically no loss or damage to the cotton in transit, and the insurance is naturally less.

The seed obtained by the ginning factories is usually shipped to Hull or some English port for pressing. But with a view of keeping up the quality of the crop, it is now customary for ginners to set aside the seed of any particular lot that shows up well and distribute the same for planting the following year. This custom has done much to preserve the quality of the crop. Small ginning establishments such as are found in the Southern States, do not exist in Egypt.

The fact that all of the Egyptian crop is watered regularly by artificial means has much to do with the uniformity of the fiber. With the improved methods of the irrigation system, water is now more abundant than formerly,

FIG. 3. FILLING THE BINS AT THE EGYPTIAN PRESSING CO.

in fact it is occasionally found that crops are damaged by too much, or injudicious, watering. The cotton plant on the whole is a hardy one, and will stand comparatively long periods of drought, but when too much water is applied the plant is inclined to favor the leaf rather than the pod. The water is lifted from the canals by the same primitive native methods which have existed in Egypt for centuries, and is allowed to flow through smaller channels into the fields.

The dam recently constructed at Assouan has done much to increase the water supply and prevent drought. This, however, is not sufficient for Egypt's requirements, and further extensive works are now contemplated. When these are constructed it will mean that in the course of time a larger cotton acreage may be looked for. In 1896, the tars.* Now it is over 1,000,000 cantars, and it may increase, perhaps, at least half as much again when the irrigation scheme is completed. The effect of the dam upon Lower Egypt is proportionately less as regards the extension of growth, but it has secured a better water supply for the crops during the spring and early summer months, and some waste lands are now being washed and reclaimed.

A few years ago it was customary to plant cotton on the Delta lands once every three years, the other years being used for a rotation of crops. At that time no fertilizers were used, but of late years it has been customary in some districts to fertilize the land before sowing, in which case it was not necessary to rotate the crops as formerly, so that in this way the area under cotton has increased. On the other hand the production per acre of lint cotton has shown a marked falling off.

In regard to the possible developments of the Delta crop, based upon the result in 1898, when the cultivation was doing well and when the Delta yield was about 6,200,-

* A cantar is about 98½ pounds.

000 cantars, one might estimate a further possibility since then, with good cultivation, of an eventual 30 per cent., making a crop of about 8,000,000 cantars. The Mit Afifi seed, which forms the greater part of the Delta crop, is gradually deteriorating. It may not be generally known that Mit Afifi was introduced about 20 years ago from a single freak plant discovered in the fields. It arrived just at the right time, for Gallini, Ashmuni and other growths were failing. The deterioration is the natural result which must come after some years, if strict measures for re-selection are not used.

The next growth of any importance today is Yannovitch—a cotton with a particularly fine, silky fiber, much lighter in color than Mit Afifi, though somewhat darker than Sea Island, for which, however, it is found to be a very good substitute. It is a mistake to suppose that this is derived from Sea Island seed, or that American seed is planted in Egypt.

Still another growth is Abassi, which is a pure white cotton having all the other characteristics of the Egyptian staple. It is quite distinct from what is termed the "old white Egyptian" which was a cotton grown in the neighborhood of Zifteh, in the Delta, with a rather rough fiber more resembling Peruvian. The cultivation of Abassi, however, and of other growths with the exception, of course, of Mit Afifi, has not received much encouragement, owing to the fact that the production per acre is small, and the cultivation more difficult on account of the plants being less hardy.

FIG. 4. BALING PRESS AT THE EGYPTIAN PRESSING CO.

The most recent growth in the Delta is Nubari. Compared with Mit Afifi it is a strong cotton, very classy and more costly. It ranks between Mit Afifi and Yannovitch, but the crop at the present time is only a small one.

The crop of Upper Egypt is Ashmuni which, however, must not be confused with the crop of the same name which was formerly planted in the Delta. Compared with Mit Afifi it is lighter in color with a somewhat coarser fiber. The cotton during recent years, on account of the better water supply, has shown much improvement, and is now being successfully worked by a number of American spinners who are beginning to appreciate its merits.

Mit Afifi seed has been tried in Upper Egypt, but, up to the present, cultivation generally in that part of the country has not succeeded. What gives ground for hope that it can be successfully cultivated in Upper Egypt, is the fact that a few enlightened cultivators have had successful crops. It is an interesting question, as the cotton crop of Upper Egypt will still increase further as more basin land is converted into summer cultivation.

The Government has rightly decided that nothing must be done in the Soudan which shall prejudice the supply of water required for Egypt. This means that a quite insignificant quantity of water may be drawn from the Nile after January 31st of each year, in order that the bulk of the supply may come down to fill the Assouan reservoir and give the early summer supply for Egypt. The Nile begins to rise about July 1, and comes to its height in October. The Irrigation Service has calculated the quantity of water that may be spared, and has granted rights for pumping onto a few thousand feddans. Beyond this no pump may work after January until the new water comes in the summer.

In closing, a few words may not be out of place respecting the effect of the dam at Assouan. It will be remembered that this great engineering work was completed in the year 1902, and the crop of the following year was the first to be benefited. It was constructed chiefly with the view of protecting the land under cultivation, and while it was not expected that there would be any material increase in Lower Egypt, it was recognized that the land of Upper Egypt would be chiefly benefited. This, of course, refers to a narrow strip about 600 miles long and a few miles wide, but the soil is rich, and with a regular supply of water, crops could be depended on. Beyond this strip, and this applies to all land which cannot be reached by the Nile water, there is nothing but a sandy desert impossible for cultivation.

## PROPOSALS FOR MATERIALS.

Depot Quartermaster's Office, 26th Street and Gray's Ferry Road, Philadelphia, June 17, 1911.—Sealed proposals, in triplicate, subject to the usual conditions, will be received here until 11 o'clock, A. M., July 17, 1911, and then opened, for furnishing and delivering at this depot: 160,000 yards blue denim; 525,000 yards unbleached sheeting; subject to not to exceed 50 per cent. increase in quantities if desired by this department. The right is reserved to reject or accept any or all proposals, or any part thereof. Preference will be given to articles of domestic manufacture, conditions of quality and price (including in the price of foreign productions or manufactures, the duty thereon) being equal. Specifications of denim can be had and standard sample of denim can be seen upon application at this office, and full information as to both articles will be given. Envelopes containing proposals to be indorsed "Proposals for Materials, to be opened July 17, 1911." Lt. Col. Chauncey B. Baker, depot quartermaster.

The following information is furnished in connection with the foregoing: 160,000 yards Blue Denim; Specifications No. 1111. 525,000 yards Unbleached Sheeting, conforming to the following minimum requirements: Warp strength, 70 lbs. Filling strength, 65 lbs. Warp threads, 68. Filling threads, 76. Width, 43 inches. Weight, 5 1-2 ounces per linear yard.

# Mill Conditions and Market Reviews.

## SOUTHERN MILL SITUATION.

*(Special Correspondence.)*

Conventions have been the order of the day during June. Both the North and South Carolina cotton manufacturers associations have held their annual conventions, the former meeting in Charlotte on the 15th, and the latter meeting in Ashville, N. C., a few days earlier.

About 700,000 spindles were represented at the meeting of the North Carolina body, and while attendance was comparatively small, the sessions were unusually interesting. After five years of service at the head of this body R. M. Miller, Jr., of Charlotte, resigned and S. B. Tanner was chosen Mr. Miller's successor. Strange to say the North Carolina spinners did not discuss the subject of curtailment, nor did they attempt to devise means to improve the present unfavorable conditions besetting the markets. However it is reported that curtailment is general throughout the state, conservative estimates placing the amount at about 25 per cent.

The North Carolina mills are pursuing an individual policy in this matter, running when business justifies such a course. The situation is unfavorable, and few mills are making any profit on production at the present time, although there has been some improvement in market quotations since the first of the month. C. E. Hutchinson, of Mount Holly, was elected first vice president; J. W. Cannon, Concord, second vice-president, and T. L. Black, of Charlotte was re-elected secretary and treasurer.

In his annual address, President Miller reviewed the accomplishments of the association during the past year. Among these was the saving of many thousands of dollars to members on coal through the contract with the Carolina, Clinchfield and Ohio railway. It was found during the past year that a combination of other railroads had been formed in order to keep the Clinchfield from furnishing the mills with Pocahontas and New River coal, but the Clinchfield people lived up to contract and Mr. Miller expressed the belief that they would continue to do so. Efforts have been effective to increase the association's membership by bringing in other associations of textile men. Much money was reported to have been saved the mills by the traffic work of Secretary Black.

A feature of the meeting was a talk by Stewart W. Cramer of Charlotte, on the tariff. He is a member of the tariff investigating committee, appointed by the American Cotton Manufacturers Association. Members expressed the hope that cotton schedules would not be seriously tampered with, in view of the present demorilized state of the trade. Mr. Cramer's discussion of the relation between the tariff and the mills was able and comprehensive. He made no complaint in his speech, however, against the schedules as existing or proposed.

The desirability of marine insurance on goods shipped from the South to foreign ports was declared for by a number of speakers, and the sentiment was unanimous, although no resolutions were adopted expressing the views of members. W. A. Erwin, of Durham, lead the discussion of this topic. Railway rates from North Carolina do not include the insurance feature except so far as land transportation is involved. The moment goods are landed on a vessel for a transoceanic trip, responsibility falls on the shipper. On the other hand, South Carolina manufacturers are given a rate which includes marine insurance, though it was rumored that this was to be displaced at an early date by another rate not including this feature. The next meeting will be held in Charlotte one year hence.

The meeting of the South Carolina spinners was characterized principally by the unanimous decision to enter upon a drastic program of curtailment during the months of July and August. The South Carolina body represents over three million spindles, and the resolution calling for a two weeks shut down during those months was unanimously passed. Some of the mills will shut down two weeks during each month, while all will be idle at least two weeks during the two months. Judging from a report from Spartanburg, the mills of South Carolina are already beginning heavier curtailment, it being stated that several mills including the Whitney and Gaffney Mfg. Co., having already closed down.

Capt. E A. Smyth, of Greenville, was elected president of the association. As vice president J. D. Hammett succeeds V. M. Montgomery, while C. S. Manning, of Greenville, was elected secretary and J. A. Brock, of Anderson, treasurer.

From indications July and August will witness the heaviest curtailment of the entire year. In the summer hardships attendant upon enforced idleness of operatives are less, and there is less danger of a disorganization of mill forces then. Besides, it is not so much a matter of preference, as of necessity, as heretofore pointed out. At current prices it is well nigh impossible to buy cotton and make it up into goods with any degree of profit. Therefore manufacturers are closing down their spindles, and will until conditions improve. In the opinion of a great many textile seers the advent of Fall will be accompanied by a rise in prices of goods. No matter if the crop is a record breaker, it is believed that the world demands it, and will also demand goods at greatly appreciated prices. If the price of cotton is kept up to the fifteen cent mark, it will be necessary to coax goods quotations up, but with heavy curtailment in the summer months it is believed prices will improve. Reports from various parts of the South, as well as New England, show that many mills are inaugurating short time policies. The Montala and the Montgomery Cordage Co., of Montgomery, Ala., are said to have closed down until the new crop is harvested in the Fall, while two mills at Selma, Ala., and one at Florence, Ala., have closed because they cannot operate at a profit. Mills at Avondale, Ala., Columbus, Ga., and elsewhere are running short time, according to report.

The Avelon at Mayodan, N. C., one of the largest mills in Rockingham county, N. C., was burned on the night of the 15th. Loss is estimated at $250,000. The mill was headed by F. H. Fries, of Winston Salem, N. C. and W. C. Ruffan was secretary, treasurer and manager. It made yarns and was equipped with about 25,000 spindles. Four hundred hands were employed.

Quite a stir was created in mill circles a few days ago over a report from Washington to the effect that Southern spinners, alleged to have been connected with the bull pool

leaders Patton, Hayne and Brown, were to be prosecuted for having participated in a "conspiracy in restraint of trade."

It is not believed that anything will come of this talk of an investigation, for the simple reason that the spinners who bought cotton in the notable cmpaign out of which has grown a suit, merely bought cotton for their own use, made the staple up into goods and sold it in the usual way. No cotton was held for speculative purposes, and it is generally believed if there was any conspiracy it was headed by the bear clique who were endeavoring to batter down the legitimate price of cotton—a fact which has strangely been overlooked by the attorney general. Southern spinners who bought cotton in New York bought it because prices there had been hammered down several cents below the legitimate price prevailing in the South. They bought for use and demanded delivery, and thereby hangs a tale.

## NEW ENGLAND MILL SITUATION.

(*Special Correspondence.*)

A fair share of the improvement in mill prospects noted in May was retained in June. There was some slight falling off in the prices on wide print cloths, but on the whole the trend of the market was toward general steadiness. That a large measure of the ability to hold prices was due to continued curtailment is the common belief of merchants, yet it is the fact that there has been some moderate buying, and users of goods have shown some disposition to anticipate their wants. Betterment in the volume of orders booked is more noticeable in the fine combed yarn division, and the mills at New Bedford are better supplied with business than they have been at any time this year. At the same time it is not disputed by manufacturers or merchants that values have not been satisfactory to mills.

Curtailment is now being forced by a shortage in cotton supplies, and the desire of mills to conserve their limited stocks until a new crop is grown. Were prices for cloths on a parity with the raw material mills would find some way to meet the situation, but the forces that have been working against manufacturers in the matter of remuneration or their work are still obvious, and the only way of meeting the strain is to shut down. Curtailment is very uneven. At Fall River there have been weeks when the production fell off to a third of the possible output. On the other hand, there are mills in Fall River and outside that have not curtailed, either because of a lack of orders, a shortage of cotton, or even in consequence of the disappearance of a margin of profit. Competition for new business has been close and the steady offering of small spot lots of merchandise accounts for much of the difficulty mills find in advancing prices.

New England manufacturers speak of several hopeful features in the situation and outlook The export shipments of cotton goods for 1911, in the middle of June, were about 140,000 bales, as compared with 102,000 bales in the first part of 1910, at the port of New York. While the China trade has not been large this year, totaling possibly not more than 70,000 bales, the total stocks of American cloths of all kinds in China amounted to but 40,000 bales on May 1. This stock seems nothing when compared with the 425,000 bales carried during the congestion which manifested itself in China in the last half of 1906.

Again, it is pointed out that stocks in first hands in this country and in New England in particular, are small, as compared with any comparable period in general business history. Fall River was carrying only 950,000 pieces of print cloths in the middle of the month, while as far back as 1898, this single centre carried nearly 4,500,000 pieces of unsold goods. In the month of May many sales were made that reduced the limit stocks some Rhode Island and Massachusetts mills had on hand. With the stocks of goods held by Southern mills known to be small because of authenticated reports from the New York commission houses, the prospects that an improvement in consumption will quickly be reflected at the mill centres are something more than imaginative.

It is recognized that no real relief to mills using large proportions of cotton in their output can come until a new crop is grown; and supplies have been so greatly exhausted in warehouses that the demand for the new crop will begin just as soon as the staple is ready for marketing. In other words, while New England manufacturers would much prefer to see lower priced cotton they recognize the fact that the possibility of demand exceeding supply will be apparent for some months to come and hence they feel that cloth buyers are overstaying their market and will have to pay the penalty in a higher margin of profit.

The print works are running rather better than the bleacheries or the finishing works. The Arnold works are well supplied with forward business on fine cloths. The Pacific is behind on some deliveries of percale and specialties and is also very busy in the engraving rooms on new patterns for the coming spring season. The American and Alonquin works at Fall River, engaged wholly on staples, are running in much larger volume than a year ago and are moderately well supplied with businsss for the next few weeks. Since the middle of May the larger bleacheries and finishing works have been busier.

It is estimated that there are about 15,000 looms in New England engaged on silks and cottons of various descriptions and mills are already receiving orders for new goods for next year. Some mills at New Bedford have as many as 2,000 looms engaged on this class of work The relatively low price of raw silk and the more favorable prices at which 60's combed yarns have been ruling since last year, made it possible to offer many of these cloths at values that would permit profitable retailing at 25 cents a yard. This has brought this class of merchandise into the popular selling class and has led to a large production which bids fair to be increased shortly, as the new selling season has about started.

The important trade feature of the month has been the opening of 32-inch dress ginghams and many of the lines of fine fancy cottons for the new spring season. Soisette, the fine plain fabric brought out a few years ago by Clarence Whitman & Co., has been priced for the new jobbing season at 16 1-2 as against 17 1-2 last season.

The Amoskeag Manufacturing Company has placed a price of 11 cents on Beverly 32-inch dress ginghams, which corresponds with the AFC in 27 inch, and 10 cents on the Fairfax, which corresponds with the utility grade. Toile du Nord, Red Seal, and other popular dress ginghams, are being offered to the trade for a new season but it is doubtful if a new price will be named much before the first of September when the price will be made in keeping with cotton and general market conditions.

Many of the largest selling agents handling dress ginghams are inclined to the belief that the new season will be the hardest one known in many years in so far as competition goes. The vast increase in gingham loomage in New England and the South has now been made ready for business and agents fear that consumptive capacity will not rise to the high level set in producing capacity An adjustment seems at hand and the most experienced agencies handling these cloths are cautioning their mills to be prepared for a season of very close prices.

When June 10th arrived, B. B. & R. Knight continued the price of 9 3-4 cents for Fruit of the Loom which had been pegged 90 days previous. More of this particular line of goods has been sold this year than usual, but it is conceded that profits have been close. Other well known ticketed bleached goods lines are being held steady but jobbers have not been operating for deliveries beyond the life of the cotton crop. It is fully expected that unless the movement is broader after July 4th a stimulating or forcing process of selling will again be adopted. Cutters have bought bleached cottons better this past month than they did a year ago, but as many of these orders can be filled in part from stock the bleacheries will not feel the full benefit of the selling until the general trade improves. Mills making 30-inch and 40-inch combed yarn plain cloths are pretty well supplied with business. A very fair business has also come forward on fancy weaves for dress and shirting purposes. There have been some fair sized orders placed on piques, poplins, welts, and other staples of the corded varieties and stylers look for a larger volume of trading in this class of merchandise for next year. There have been many orders placed on shirtings and dress fabrics in colored yarns.

The blanket and napped goods mills are hurrying out their deliveries and some duplicate trading on these cloths has already begun in a satisfactory way from far Western points. The leading lines of canton flannels and domets are well under order and no accumulations are reported. The denim and coarse yarn cloth mills are still running short the exception being possibly in certain grades of tickings that are moderately under order for the next 30 days.

The two largest quilt mills have sold their product for fall. The other mills have not done so well, partly because of prices not being satisfactory, and again because the trend of trade among jobbers has been to confine orders as much as possible to fewer lines.

The light weight underwear mills whose products are best known, such as the Lawrence and Otis have been doing a good business in the past few weeks and they will go into September with clean stock sheets. The hosiery mills that are equipped to make the sheer fine guaged goods now so popular are selling their product steadily, but those making the heavier grade staples are in need of business.

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An American consular officer in an European country reports that a local importer of raw cotton desires to import cotton yarns, unbleached sheetings, calicoes, and prints. He states that although it might be difficult to maintain a steady sale at the present time, there have been certain conditions of the market when it would have been possible for him to do a good business in these articles, had he been in correspondence with an American manufacturer. He believes that in the future such a condition of the market may arise and desires to anticipate it by getting in touch with American manufacturers. For further information apply to Bureau of Manufacturers, Washington, D. C., and refer to file No. 6853.

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## MONTHLY REVIEW OF THE COTTON MARKET.

BY H. & B. BEER, NEW ORLEANS.

The initial Government crop report was in keeping with expectations in so far as the acreage was concerned, an increase of 1,586, 000 acres being announced, or a total of 35,004,000 against 33,410,000 acres last year. As regards the condition of the crop, it was unusually high, averaging 87.8 compared with 82 last year and the ten year average of 80.9.

In the meantime the crop has continued to make progress despite unusually hot, dry weather in nearly all sections of the belt for this time of the season. But rain is needed generally over the belt to-day, especially in the central portions and western portions of the cotton region, more particularly in Texas. The total average rainfall for the month of May in Texas was 2.13 inches against 3.91 inches last year, 3.06 inches year before last and 5.69 inches in 1908, making the total average for six months figure 14.60 inches compared with 12.97 one year ago, 7.89 inches two years ago and 16.13 inches three years ago. Thus far this month the rain fall has been very light in Texas, and corn has suffered considerably, and while cotton is holding up well, it has about gone the limit of enduring hot, dry weather without deteriorating. Therefore, it is necessary that good rains be had in Texas and other sections of the Central and Western belt if the prevailing high condition of the crop is to be maintained.

The first new bale of this year's growth was marketed at Houston, Texas, June 11th, five days earlier than the previous record, which was June 16th, 1904. The cotton was grown in Cameron county, Southwest Texas, and weighed 493 pounds. This bale will soon be followed by numerous other bales of new cotton from South and Southwest Teras, and cotton is said to be bolling earlier than ever before in South Louisiana, South Mississippi and South Alabama where the outlook for the new crop is excellent. Less has been heard of the boll weevil in the Mississippi Valley and Texas than for a number of years, reports of an official nature having it that the excessively high temperatures have served to kill the weevils in Mississippi, Louisiana, Arkansas and Texas.

The favorable prospects for an early and large movement of new cotton, and perhaps a crop of record breaking proportions, has taken the edge off old crop months, July and August in particular, these positions having suffered a decline of about 100 points during the past couple of weeks. It has been discovered that the since the world's visible supply is about the same as last year's reserve, of American 1,554,000 bales compared with 1,589,000 all kinds 2,-679,000 against 2,701,000, that the trade was able to get along with an American crop of about 12;000,000 bales. Therefore, since prospects are for an early and very large crop, estimated all the way from 13,000,000 to 15,000,000 bales, all the manipulation has been taken out of the market.

There does not seem to be any improvement in trade in this country as yet, especially in textiles, but the outlook for the future is bright. Large grain and cotton crops are

promised the West and South, and business should improve in the fall of the year. Values for spot cotton are likely to decline, and as stocks of cotton goods in jobbers hands have been reduced to a minimum, there will probably be a good demand for export as well as for domestic account. At any rate the outlook, in so far as the spinners are concerned, is decidedly more favorable than it has been for some time.

Of late there has been very little demand for spot cotton in the South or Liverpool, many mills curtailing, running on short time or closing down altogether, preferring to await the arrival of new crop cotton in preference to paying ruling prices for the raw material and selling the mill product at a loss. The amount of cotton marketed the past week was 25,000 bales compared with 43,000 last year and 68,000 year before last, thus far this month 68,000 against 118,000 and 157,000, making total to date 11,413,000 vs. 10,056,000 and 13,238,000. Spinners takings of American cotton to date amount to 10,643,000 against 9,939,900 last year and 11,610,000 year before last.

## THE YARN MARKET.

While the business for the month was not of such amount as could be considered large, the general yarn market situation is decidedly brighter. Manufacturers have much more confidence in the outlook and spinners, particularly Southern spinners, are standing firm and quoting no prices for fall business based on a possible decline in the price of the raw material. All yarn quotations being made are based on the present price of cotton with a legitimate profit. Spinners are holding strongly to their position that they must receive a fair profit on sales. This is undoubtedly the proper position for them to maintain, as any discounting of future crop conditions at this time would be merely a gamble pure and simple and might work to the misfortune of the spinner thus taking chances.

Early in the month spinners showed a tendency to be cautious in accepting contracts for fall delivery and the buyers on their part bought in a hand to mouth fashion sufficient for their immediate needs and refused to meet the spinners advances only when they were forced to do so by the actual orders for yarns. As a rule the spinners prices were fully one cent a pound more than the buyers were willing to pay, but many spinners were strong in their statement that they would rather close down their plants entirely than to continue making yarns at a loss to the mill. One well known Southern spinner was quoted as saying that the prices buyers are willing to pay, would not cover the actual cost of the new cotton supply. As the month advanced yarn prices slowly hardened and mills were able to obtain a little better terms than they had been able to do the previous week. While some of the present prices is said to be based on the price of 13 cents for cotton, other spinners claim that basing a price on 13 cents for cotton is entirely too low a basis as in many cases the actual cotton cost 15 cents and prices should be figured from that point. Knitters purchased very little during this period of the month and seemed to be more intent upon curtailment of production, but were said to be making inquiries for yarns for fall consumption. The weaving trade did some little buying, but not on a large enough scale to denote any marked activity. Combed yarns, which were in fair demand last month were rather quiet during this period.

The middle of the month found the condition of the Boston yarn market rather dull and unchanged. Trading of all kinds was of the narrowest possible character and promises to show little change until late in the summer or until the ideas of the buyers and sellers regarding prices of new crop yarns come closer together. All the rumors sent out from the various rumor markets, tend to the belief that because of the expected bumper crop of cotton, yarns must be cheaper and these rumors are being industriously circulated by those who are interested in making the spinners believe that such will probably be the case. Those spinners, however, who are familiar with the present condition of the cotton market, and know how bare the most of the warehouses are of cotton, hold strongly to the belief that even with a bumper crop of cotton, the prices will be held up to a fairly high point for sometime to come because of the excessive immediate demand that will be made upon the new crop as soon as it begins to be marketed. Some Southern spinners are claiming to have made sales at prices fully a half to three quarters of a cent above the best that could be secured in the New York markets. One prominent dealer in commenting on the situation however, said that these individual sales do not make market prices, while another prominent dealer said that prices at which yarns can be purchased make the market price.

Following are the quotations for the month of June, although most of the quotations shown are bid quotations are not asked quotations:

### SOUTHERN SINGLE SKEINS

| | | | |
|---|---|---|---|
| 4s to 8s | 22 @.... | 20s | 23 @23½ |
| 10s to 12s | 21½@22½ | 22s | 23½@.. |
| 14s | 22 @.. | 26s | 25 @.. |
| 16s | 22½@23 | 30s | 26 @.. |

### SOUTHERN TWO-PLY SKEINS.

| | | | |
|---|---|---|---|
| 4s to 8s | 20 @21½ | 36s | 29 @.. |
| 10s to 12s | 22 @.. | 40s | 30 @31 |
| 14s | 22½@.. | 50s | 35 @36 |
| 16s | 23 @.. | 60s | 43 @44 |
| 20s | 23½@.. | 3-ply 8s upholstery | 22½@.. |
| 24s | 24½@25 | 4-ply 8s upholstery | 22 @.. |
| 26s | 25 @.... | | |
| 30s | 26 @.. | | |

### SOUTHERN SINGLE CHAIN WARPS.

| | | | |
|---|---|---|---|
| 10s to 12s | 21½@22 | 24s | 24 @.. |
| 14s | 22 @22½ | 26s | 25 @.. |
| 16s | 23 @.. | 30s | 25 @26 |
| 20s | 23¼@.. | 40s | 30 @31 |
| 22s | 23½@24 | | |

### SOUTHERN TWO-PLY CHAIN WARPS.

| | | | |
|---|---|---|---|
| 8s to 10s | 21¾@22 | 26s | 25 @25½ |
| 12s to 14s | 22½@23 | 30s | 26½@.. |
| 16s | 23½@.. | 40s | 31 @.. |
| 20s | 23½@24 | 50s | 36 @.. |
| 24s | 25 @.. | | |

### SOUTHERN PEELER FRAMES CONES.

| | | | |
|---|---|---|---|
| 8s | 22 @.. | 18s | 23½@.. |
| 10s | 22 @.. | 20s | 23½@.. |
| 11s | 22¼@.. | 22s | 24 @.. |
| 12s | 22½@.. | 24s | 25 @.. |
| 14s | 22¾@.. | 26s | 25 @.. |
| 16s | 23 @.. | 30s | 27 @.. |

A business man in India who is a large manufacturer has written to an American consulate that he would like to form connections with American firms for the purpose of importing cotton yarns into that country. In order to expedite business he has furnished bank references. For further information apply to Bureau of Manufacturers, Washington, D. C., and refer to file No. 6858.

## THE KNIT GOODS MARKET.

The knit goods market for the past month has been considerably better than for sometime past and since April there has been a gradual increase in the business of the knit goods manufacturer, that while not large, is sufficient to make them quite optimistic of the future. Both hosiery and underwear salesman are on the road with their new samples and in some cases orders are coming in quite briskly. While the first of the month seemed to indicate that the buying was principally for immediate needs, occasional buyers showed a tendency to order for the future. With but few exceptions manufacturers of cheap grades of hosiery complained of poor business at this period. The medium and fine grades were doing fairly well in spots. Some weavers of plaited silk half hose are quoted as being well satisfied with the wearing qualities. While the top and feet are all cotton the legs are silk plaited on cotton. This combination gives a light weight with a firm texture of fair wearing qualities. Other wearers complained that the silk separates from the cotton and the hose failed to give even reasonable service. In all probability these are merely a fad and will very soon be relegated to the archives of ancient history. Duplicate orders on light weight cotton underwear came forward very steadily during the early part of the month from retailers in all sections of the country.

While individual orders were not large, taken as a whole the business made a very satisfactory showing. Light weight ribbed goods of all kinds were in good request, also balbrigans and light weight lisle goods. Jobbers were placing some small orders for spot delivery taking one or two case lots at a time. Balbrigan lines which had accumulated at the mills to a large extent were moving more freely, but there was considerable complaint of inroads being made on that end of the business by woven underwear. Handlers of woven goods state that the demand has picked up to a marked extent, and nainsooks, madras and other light sheer fabrics are being used to a considerable degree. Manufacturers seem to expect that the new spring season will show demands for one piece garments and are therefore preparing for a good season on union suits. These are without doubt increasing in popularity with the consumer. There has been some call in evidence for balbrigan union suits, but these goods have not proved anywhere near as popular as the light cotton ribbed goods.

Many salesmen are out with the new spring lines in both underwear and hosiery and probably by the original date set, July 10th, the full display will be before the jobber. Prices on balbrigans were opened on June 12th instead of waiting until July 10th as had been decided at a previous meeting, of the New York State Knit Goods Manufacturers Association. Retailers were reported to be doing a very good business through the entire month on light weight underwear. The hosiery trade is in the between seasons period, but the call for sheer goods is still predominant. Many express the opinion that the height of demand for silk hosiery has been reached. There are however, no signs of dropping off as yet but it is reasonable to suppose that this fad will very soon wear off, because of the extremely poor wearing qualities of this class of sheer material. The mills however, are still working on sheer goods and the bulk of the people are buying this quality. There is as yet considerable uncertainty about prices for the new spring styles of underwear and it is quite probable that these will be revised later on. There seems to be a more or less determined effort on the part of parents to get back to the heavier weight lines of hosiery for children's wear, as at the present time many complain of having to continually purchase hose in order to keep their children properly clothed. The slightest breaking of a stitch is sufficient within a period of a few minutes, to reduce the garment to rags. This effect is practically the same in both the sheer silk and sheer lisle goods. The month of July will probably see the new lines well established as to price and a larger amount of orders from many parts of the country. As soon as the season becomes far enough advanced so a reasonable estimate of the new cotton crop may be made, business in all lines of knit goods will probably become more active and induce a more favorable condition in both the yarn and knit goods markets.

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Efforts are being made to increase the cultivation of cotton in Turkey, and as a result there is likely to be an opportunity for manufacturers to sell cotton seeders and cultivators.

The inspector of agriculture for Smyrna has recommended that such machines be introduced. About 35,000 bales of cotton are produced in this district annually, but the cultivation of cotton has not been undertaken scientifically and the output could be largely increased. Concerning cotton growing in the Province of Smyrna the Turkish inspector of agriculture has reported to his Government:

The cultivation of this plant could take the foremost place in this Province on account of the exceedingly favorable climate and soil. Unfortunately, results hitherto have been far from happy, because this question has never been studied seriously or scientifically. Two kinds of cotton are chiefly cultivated here. The so-called "Yerli" (native)—short straight threads, which gives a smaller yield but resists drought better than the other, is looked upon as the safer plant, for it does not open its bolls completely and thus preserves its cotton-bearing seeds. The other kind is the so-called American (long silky threads). I do not know exactly what American species it really resembles or its true origin. Its yield is fair, but it "shakes out" its seeds and needs constant watering in summer. Its cultivation requires to be greatly fostered and encouraged, and needs especially strict attention on the part of our agriculturists who, either by introducing suitable foreign kinds or by creating entirely new species through crossing, may succeed in producing cotton that will resist the drought and not "shake out" its seeds while at the same time giving a sufficient yield and a better quality.

For the improvement of cotton cultivation, the machines necessary for sewing the fields in rows must be introduced. Seed thus sown, besides the greater yield, will cause also a great saving in cotton growing, for it will allow for its cultivation by mechanical hoes (cultivators)—a saving of labor which is decidedly prized in Asia Minor in general, where workmen are scarce in the cotton season (i. e., the spring.)

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A report from an American consular officer in Portugal states that a business firm in his district desires to be placed in communication with manufacturers and exporters of cotton goods in the United States. Correspondence should be in French, Spanish, or Portuguese. In applying to the Bureau of Manufacturers, Washington, D. C., refer to file No. 6838.

# COTTON MANUFACTURING.

## FILLING PILE WEAVING AND DESIGNING.

DESCRIPTION OF THE FABRIC—METHOD OF PRODUCING THE PILE EFFECT—PLAIN VELVETEENS—LENGTH OF THE PILE—DENSITY OF THE PILE.

*(Contributed exclusively to* COTTON.)

BY PROF. WM. WATSON.

PART I.

Filling pile fabrics are covered on the face with a soft fur or nap consisting of the severed end of filling threads which project vertically from a foundation texture. The cloths are composed of only one series of warp threads, but the filling threads, so far as regards the system of interlacing, are in two series, namely, ground and pile. The ground filling threads interweave frequently with the warp so as to form a firm foundation, while the pile filling threads float somewhat loosely on the surface, and subsequently form the pile or nap.

The textures are produced in the loom in the same manner as ordinary fabrics, and after weaving appear similar except that the surface of the cloth is densely crowded with the floating picks of filling which are to be cut to form the pile. The cloths on the under side show a plain rib or fine twill effect, according to the kind of ground weave that is employed. The appearance of a cloth in both the cut and the uncut condition is represented in the lower portion of Fig. 1. The dark sections show where the pile has been cut, but the light sections are uncut, and the latter indicate how the whole face of the cloth appears before the cutting operation. The example does not illustrate the usual appearance of a filling pile texture, as in this instance the idea has been to produce a variation from the ordinary type of cloth by forming stripes of pile ¼-inch wide with equal uncut spaces between. The upper portion of Fig. 1 represents the appearance of the under side of the cloth, the foundation weave being the 1 and 2 twill.

The formation of the pile is a part of the finishing process in which the floating pile picks are cut by means of a specially shaped knife—provided with a guide—which is run lengthwise of the cloth on its surface. The form of a cutting instrument is illustrated in Fig. 2, which shows at P a front elevation, while above a side view of the rear portion is shown at R, and a plan of the forward end at S. The dimensions, which are indicated, have been obtained from an example, but they are only approximate, as the size is varied according to requirements.

Referring to the diagrams, the knife A, is a steel rod which, for the greater part of its length, is about ¼-inch square. The rear extremity is roughly pointed in order to facilitate its insertion in a removable wooden handle B, which has a circular hole bored throughout its length. The square end of the knife is packed with cotton waste or other material in order to make it fit tightly within the circular hole, and it is pushed a greater or less distance within the handle in order to vary the length of the instrument. The handle is adjustably attached to a piece of wood C, which rests on the cloth and raises the rear end of the knife so that it is retained at a suitable angle during the operation of cutting. Usually the rest C, is placed at the rear of the handle B, but if required it can be attached nearer the center.

Towards the cutting end, the knife is tapered and for about three inches from the extremity it is made in the form of a narrow flat blade with a very sharp upper edge. The keenness of the blade is maintained by frequent grinding. This end of the knife is inserted in a removable metal sheath D, which terminates in a very fine point and acts as a guide. The upper edge of the blade rises above the edges of the sheath, and the object of the latter is to steady the thin blade, to guide it along the proper course, and to pass with its point under the floating picks and bring them into contact with the cutting edge. Previous to the cutting operation the pile side of the cloth is passed in contact with the upper surface of a roller which revolves partly immersed in slaked lime contained in a suitable receptacle. A thin coating of lime paste is applied to the surface of the cloth, which is then dried by being passed in contact with hot cylinders. Subsequently, the cloth is further stiffened by the application of a coating of flour paste to the under side, and drying again follows. The purpose of the second application is to fix the pile filling

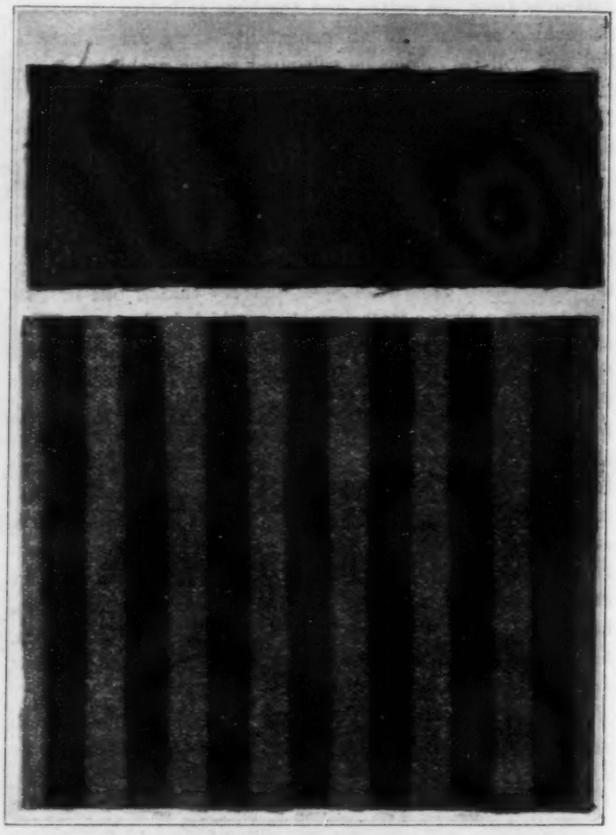

FIG. 1. SAMPLE SHOWING PORTIONS OF CUT AND UNCUT FILLING PILE FABRIC AND A VIEW OF THE BACK OF THE CLOTH.

threads in the cloth so that they will not be pulled out as the operation of cutting proceeds.

PRODUCING THE PILE EFFECT.

A length of the prepared cloth is stretched very tightly in a frame, and the operative runs the knife over its surface in the direction of the length. The finely pointed guide passes under the pile floats which are in line with its movement, and brings them into position for being cut by the blade. Successive traverses of the knife are made until the length under treatment is completed; then this portion is wound upon a beam and the next length of cloth operated upon. The process is repeated throughout the length of the piece. The cutting may be performed on short or long frames, the former taking from 1½ to 2 yards of cloth at a time, and the latter 9 or 10 yards.

ed by a process which more resembles printing. The pile side of the cloth is passed in contact with the upper edge of a finely engraved roller which revolves partly immersed in the dye solution. The amount carried up by the roller is regulated by a doctor knife. The color is transferred to the pile, and as the cloth passes forward it is acted upon by revolving brushes which spread the dye over the surface. After drying, brushing again follows, and in some cases, the cloth is also briskly rubbed by hand with an emery covered piece of wood.

The fabrics are usually classified as plain velveteen and corded velveteens which are mostly made of cotton yarns. When the pile is very long, however, the term filling plush is used, and in this type the pile is frequently developed in woolen or worsted yarns.

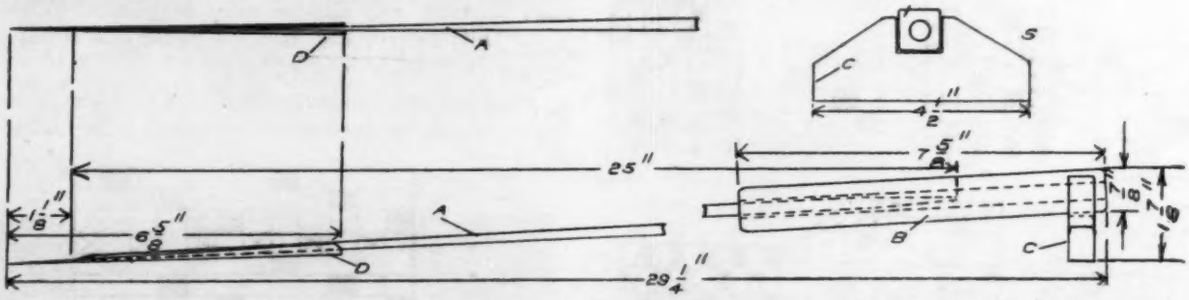


FIG. 2. DIAGRAMS OF THE CUTTING TOOL FOR PRODUCING THE FILLING PILE EFFECT.

The accurate joining of the cutting courses is a very important matter, as a defect will show at these places in the finished cloth if there is any irregularity. For this reason the long frame system is usually considered the better, because there are fewer places where the defect can occur. In the short frame system the operative cuts one cloth at a time, but in cutting long lengths two cloths, in adjacent frames, are treated. The operative walks between the two frames and cuts a course in one cloth while passing in one direction and a course in the other cloth on his return. The process is very tedious as from 700 to 1,000 longitudinal strokes of the knife may require to be made at each length in cutting a cloth 24 inches wide.

On the completion of the cutting operation the stiffening substances previously applied are removed by scouring, and the cloth is then dried. If any holes have been made during the cutting they are repaired by sewing the sides together with a fine needle. A wire is then laid on the cloth in line with the place and a thread, similar to the filling, is stitched into the foundation and wrapped round and round the wire. After the withdrawal of the wire the loops are cut and the free ends evened by means of fine scissors.

A process of brushing follows the scouring in which the pile surface is operated upon by flat brushes which work across the piece in opposite directions, and then by circular brushes. Afterwards superfluous fiber is removed by cropping or singing; in the latter method the pile surface is passed lightly in contact with hot plates. In a good quality of cloth brushing and singing may be repeated several times. After the singing, the cloth is a brown or ecru color, and if required to be dyed a light shade it is bleached.

In the dyeing, the cloth is first treated in the ordinary manner, so that the foundation will be the proper shade, but in order to get a rich bloom in the pile this is follow-

PLAIN VELVETEENS.

This class of velveteen has a perfectly uniform surface, the foundation texture being entirely covered by a short pile in which the projecting fibers are of equal length. In constructing designs for the fabrics the chief points to note are: (1) The weaves that are used for the ground and pile respectively; and (2) the ratio of pile picks to ground picks. These factors, together with the ends and picks per inch of the cloth, influence the length, density, and fastness of the pile.

The foundation weaves mostly used are plain, 1 and 2 twill, and 2 and 2 twill, the last weave being employed for very heavy structures. The interlacing of the pile filling is almost invariably based either on the plain weave, a simple twill, a sateen, or a sateen derivative.

The pile and ground picks may be arranged in any reasonable proportion, but generally a particular ratio is most suitable for a given weave. Diagrams A, B, C, D and E in Fig. 3 are designs for standard velveteens, with the plain foundation weave, the latter being represented by the crosses (x) and the base weaves for the pile interlacings being shown at the left side of the plans. In each design the number of pile picks to each ground pick is equal to the number of picks in the repeat of the pile weave motive. This is a convenient ratio but other proportions of pile to ground picks are quite easily arranged in the same weave.

A distinct feature to be noted in the designs is that the pile weave motives are indicated only on alternate ends; thus each plan is on twice as many ends as the base weave. Design A is arranged two pile picks to one ground pick, and the pile weave is based on the plain weave which yields a filling float of three. In a finely set cloth the pile from this design is short and poor, but if there are not many ends per inch, a fairly good result is obtained.

In design B, the pile weave is based on the 1 and 2 twill

which yields a filling float of five, and there are three pile picks to each ground pick. This design yields a fine and rich effect and is very extensively employed. Designs C and D are each arranged four pile picks to one ground, but whereas in design C the pile interlacing is based on the 1 and 3 twill, in design D is based on A the four harness satine weave. Both of these yield a float of seven, and

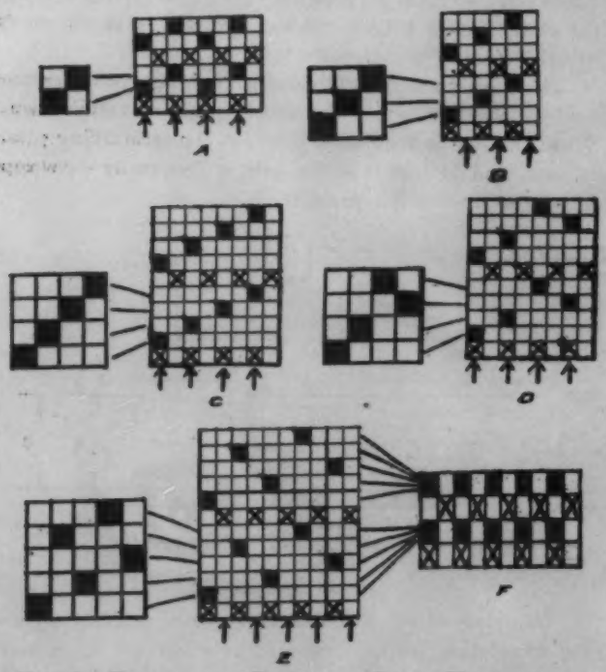


FIG. 3. DESIGNS FOR PRODUCING PLAIN VELVETEENS.

produce exactly similar results in the finished cloth. Design E is arranged five pile to one ground, and the base for the pile interlacing is 1 and 4 satine which gives a float of nine.

In order to produce a dense pile, a very large number of picks per inch of filling are required to be inserted, the number varying from about 300 in 40s cotton filling for the design B to about 500 in 60s filling for the design E. There are two reasons why it is possible to insert such a large number of picks. First, the warp is held under great tension, and the ends lie almost straight in the cloth which causes the filling threads to do most of the bending. This results in the foundation texture being constructed on the filling rib principle, hence a comparatively large number of ground picks can be inserted; secondly, the system in which the pile interlacing is arranged enables the pile picks to be beaten over one another so that each row occupies not more than the space of one ground pick. Also, in the plain back structures, all the pile picks go into the same shed as the first ground pick, but are in the opposite shed to the second ground pick. Therefore, so far as regards the space occupied by the picks the practical structure effect of each design in Fig. 3, is somewhat as represented at F, that is, the total number of picks in the repeat of each design go into the space of four picks of which three are in the same shed.

The diagrams given in Fig. 4, in which design G is similar to the plan B in Fig. 3, will enable various features of the velveteen structure to be noted. The flat-view diagram given at H, which corresponds with G, will serve to show somewhat how the pile picks crowd over each other in the fabric. This, however, is only a convenient representation of the structure, as in the actual fabric the ground picks are entirely concealed by the floating pile picks.

The purpose of binding in the pile picks by the alternate ends A only, is to enable the cutting to be more easily and more quickly accomplished. This will be understood from an examination of the cross sectional drawing given at I in Fig. 4, which represents how the picks 2, 3, 4 and 5, in the plan G, interweave. Each pile float stands out furthest from the foundation cloth at its center, and the guide of the cutting knife is so adjusted that only those floats are engaged whose centers are in line with the longitudinal movement of the knife. The method of binding the pile picks causes the centers of the floats (indicated by the arrows above diagram I) to occur only on alternate ends; therefore only half as many longitudinal traverses of the knife are required as would be the case if the pile picks were bound in by every end.

An important feature, moreover, is that the alternate binding causes regular courses or "races" to be formed in

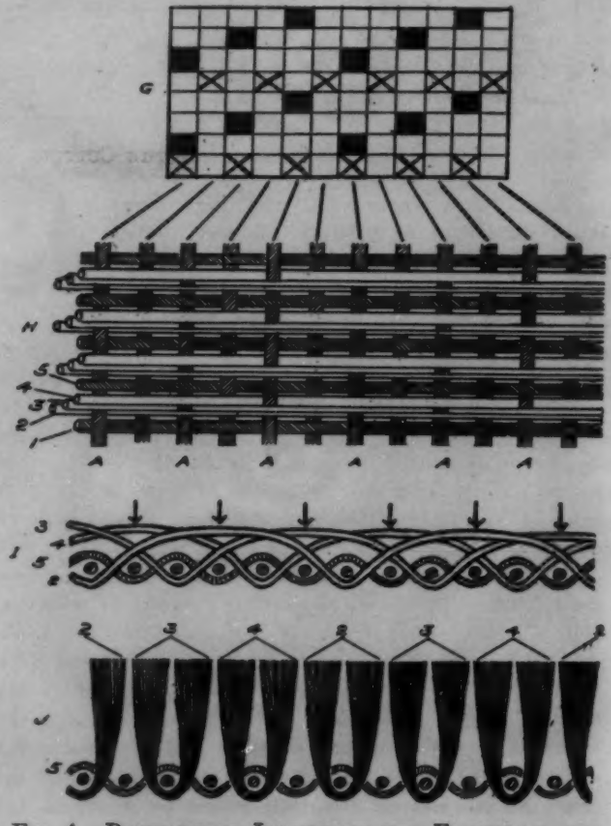


FIG. 4. DIAGRAMS TO ILLUSTRATE THE EFFECT OF THE INTERLACINGS IN A PLAIN VELVETEEN.

the foundation texture which are readily followed by the knife guide. The latter is so fine and flexible that when once its point is inserted in a race it will not readily leave it even though the operative's hand has a ziz-zag movement along the surface of the cloth. Arrows are indicated below all the plans in Fig. 3 to show where the cutting races occur.

After the cutting, the twist runs out of the free ends of the filling threads which then project vertically from the foundation in the form of tufts of fibers, in the manner represented at J in Fig. 4. Each repeat of the pile

weave produces one horizontal row of tufts, and in the plans in Fig. 3 a complete row of tufts is formed to each ground pick.

LENGTH OF THE PILE.

The length of the pile varies according to the ends per inch of the cloth and the length of the pile weft float. An increased length of pile is obtained either by reducing the ends per inch or by increasing the number of ends over which the pile filling floats; and conversely, a decreased length results from increasing the ends per inch or from reducing the pile float. With the same number of ends per inch the designs A, B, C or D and E in Fig. 3 give successively an increased length of pile. For example, with 72 ends per inch on the cloth the approximate lengths are respectively 1/48 inch, 1/29 inch, 1/21 inch and 1/16 inch. The length of pile produced by the design A, with 30 ends per inch, is about the same as is produced by the plans C and D with 72 ends per inch.

DENSITY OF THE PILE.

The density of the pile varies according to the thickness of the filling, the length of the pile, and the number of tufts in a given space. An increase in the thickness of the filling tends to make the pile coarser, but other things being equal the density is increased. A long pile causes the surface of the cloth to be better covered and thus gives a denser appearance and handle than a short pile. The greater the length of the pile is, however, the fewer are the number of tufts formed by each pile pick, and with the same number of pile picks per inch, an increase in density, due to increased length, will be counteracted by a reduction in the number of tufts. It is therefore customary for an increase in the length of the pile filling float to be accompanied by an increase in the number of pile picks per inch.

In each of the plans in Fig. 3, the same number of tufts per square inch will result by employing the same number of ground picks per inch. Assuming that the warp is 2/60s cotton with 72 ends per inch, and the filling is 50s cotton, 80 ground picks per inch employed, which will give the following number of pile picks and total picks per inch for the designs.

Design A—160 pile picks and 240 total picks per inch.

Design B—240 pile picks and 320 total picks per inch.

Designs C and D—320 pile picks and 400 total picks per inch.

Design E—400 pile picks and 480 total picks per inch.

Comparisons of the number of tufts in different structures can be made by means of the following formula, which gives the number of tufts to the square inch:

$$\frac{\text{Ends per inch x pile picks per inch}}{\text{Ends in repeat of pile weave}}$$

For example, with the foregoing particulars, the design B will produce—

$$\frac{72 \times 240}{6} = 2{,}880 \text{ tufts per square inch.}$$

It will be found in the same manner that the other designs with the particulars indicated will give exactly the same number of tufts to the square inch.

*(To be continued.)*

## COTTON MILL MACHINERY CALCULATIONS.

(*Contributed Exclusively to* COTTON.)

BY B. M. PARKER.

PART 5.

PRODUCTION.

The production of the card depends upon the quality and quantity of sliver desired and is governed by the weight of the sliver, the size and speed of the doffer, and the time lost due to stripping, grinding, etc. The amount of time lost, taking all things into consideration, will not be far from 10 per cent. for the whole room. This is making allowance for one card out of every 24 to be stopped for grinding.

The actual number of pounds delivered by the card during a day may vary from 60 or 70 on fine work and sometimes below these figures, to 200 or over on coarse work. In the former case, quality is the main consideration and in the latter case the considerations of quality have been pushed aside by the demands of quantity. It is useless to think that the two can go together, for whichever one is the most desired, the other falls off.

The speed of the doffer affects the speed of every part of the card, except the cylinder, licker-in and flats. A change in the size of the doffer gear has no effect on the draft of the machine or on the weight of the sliver, as an increase in the doffer speed increases the speed of the feed rolls and calender rolls in the same proportion and its only effect is to put more cotton through the card in the same time. Consequently, the faster the doffer speed the more the card produces.

In working out the production of the card the following formula is used:

Diameter of doffer $\times$ 3.1416 $\times$ speed of doffer $\times$ minutes per day $\times$ weight of sliver $\times$ allowance for loss of time $\div$ inches in one yard $\times$ grains in one pound.

Example. Find the production of a card from following data: Doffer 27-inch diameter; doffer speed 14 revolutions per minute; weight of sliver 50 grains; working 10 hours in a day; and allowing 10 per cent. for loss of time. Substituting the above figures in the formula we get:

$$\frac{27.75 \times 3.1416 \times 14 \times 600 \times 50 \times .90}{36 \times 7{,}000} = 130.77 \text{ pounds.}$$

To be absolutely accurate in figuring production on the card, we should take the speed of the coiler calender rolls, as the sliver is weighed after passing them and is lighter than when being combed off of the doffer, due to the influence of the tension between these points. The production is more than the figures just obtained and the difference will vary with the varying amount of tension in between these points. The only reason for the use of the doffer speed as a basis for production calculations, is that it is more easily determined, if not already known.

If we take the Whitin card gearing, shown in Fig. 15, which has a 27-inch doffer, and calculate the speed of the coiler calender rolls, we get:

$$\frac{14 \times 192 \times 39 \times 36}{25 \times 38 \times 18} = 220.7 \text{ revolutions per minute of coiler rolls.}$$

Now take this speed as a basis of calculation and figure the production of the card and making the same 10 per cent. allowance for loss of time, we get:

$$\frac{2 \times 3.1416 \times 220.7 \times 600 \times 50 \times .90}{36 \times 7{,}000}$$

= 148.57 pounds.

Figuring by this method shows a difference of 17.8 pounds in the total production, or an increase of the former figures of about 13 per cent. That is, the production as figured from doffer speed is about 13 per cent. less than the card actually produces and, unless some allowance is made for this, all production figures will be too small.

If we calculate the tension between the doffer and coiler calender rolls on card shown in Fig. 15, we get:

$$\frac{2 \times 36 \times 39 \times 192}{18 \times 38 \times 25 \times 27.75} = 1.128 \text{ or practically } 1.13.$$

That is, for every yard combed off the doffer, 1.13 yards will be delivered into the can and for every revolution of the doffer, there is 13 per cent. more sliver put into the can than its circumference would indicate. Therefore any production calculation based on doffer speed will necessarily give results that will be too little, unless this fact is taken into consideration.

The tensions between the doffer and coiler calender rolls for the different cards illustrated will be seen in the folfollowing table and will indicate the per cent. of increase in calculating production in each case:

Fig. 13 Saco-Pettee, 1.15.
Fig. 14 Mason, 1.15.
Fig. 15 Whitin 1.13.
Fig. 16 Lowell 1.135.
Fig. 17 Howard & Bullough 1.10.
Fig. 18 Potter & Johnston 1.02.

From this table it will be seen that, as a general rule, 13 per cent. must be added to the production when calculated upon a basis of doffer speed. It must also be understood that the above tensions and other drafts and speeds refer to the gearing shown in the different drawings and unless the machine has exactly the same layout of gears, the resulting figures will be different.

For use in figuring productions it is convenient to have and use a constant on account of the amount of time saved. In getting a production constant the same method is followed, as previously dealt with on the pickers. On the card the variable quantities in the production calculation are the speed of the doffer and the weight of the sliver. Take the figures used in finding the production and eliminate these two quantities and we get the following, which gives the production constant:

$$\frac{27.75 \times 3.1416 \times 600 \times .90}{36 \times 7{,}000} = .1868.$$

On account of the above explained tension or draft between the doffer and the coiler calender rolls, this figure must be increased 13 per cent. to give the correct production, then:

$.1868 \times 1.13 = .2111$ Production Constant. As will be noticed this constant is figured for a 10-hour day, allowing 10 per cent. loss of time for oiling, stripping, etc.

Rule for finding the production, using the production constant:

*Production Constant × revolutions per minute of doffer × weight of sliver = pounds per day per card.*

Example: What is the production of a card with a 27-inch doffer, making 14 revolutions per minute and delivering a 50-grain sliver?

$.2091 \times 14 \times 50 = 146.37$ pounds.

The production figured before with same data resulted in 148.57 pounds produced, so it will be seen that the factor will give results close enough for all practical purposes. As there are in use card doffers of different diameters, I give herewith a table of constants for production for use on cards that have the different sized doffers.

24-inch doffer .1877 production constant.
26-inch doffer .1980 production constant.
27-inch doffer .2111 production constant.
28-inch doffer .2187 production constant.

In all the above an allowance of 10 per cent. loss of time has been made and 10 hours is considered as a day, also allowance has been made in the figures for the tension between doffer and the coiler calender rolls. In making changes in the drafts and speeds of a card the calculations can be conveniently and quickly made by proportion as illustrated by the following rules.

Rule to change the weight of the sliver:

*Multiply the weight of the sliver wanted by the gear on the card and divide the product by the weight of the sliver on the card. Answer will be the size gear to use.*

Example. A card is running a 50-grain sliver with a 16-tooth draft gear, what size gear will have to be used to change the sliver to 56 grains?

$$\frac{56 \times 16}{50} = 17.9 \text{ or } 18\text{-tooth draft gear.}$$

Also in dealing with the draft and weight instead of gear and weight:

*Multiply the draft by the weight on the card and divide by the weight wanted. Answer will be the draft needed.*

In changing the draft of the card, use the following rule:

*Multiply the draft of the card by the draft gear and divide by the draft wanted. Answer will be the draft gear needed.*

Rule to change doffer speed.

*Multiply the desired speed of doffer by the change gear on the card and divide by the present doffer speed. Answer will be the size gear needed.*

Rule to change the production of the card:

*Multiply the speed of the doffer by the production wanted and divide by the present production of the card. Answer will be the required speed of the doffer.*

The production of the card can be changed from the size of the doffer gear direct, by putting, in the above rule, the size of the change gear in place of the doffer speed.

Example. A card is producing 160 pounds per day with a 26-tooth doffer change gear, what size gear will be needed to give a production of 135 pounds per day?

$$\frac{26 \times 135}{160} = 21.9 \text{ or } 22\text{-tooth doffer change gear.}$$

*(To be Continued.)*

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The Canadian Government has renewed for one year its contract with Pickford & Black, of Halifax, for a steamship service to the West Indies, sailing from Halifax every 11 days and from St. John every 22 days. The calls at Dominica, St. Lucia, and Montserrat are to be dropped. The Canadian subsidy is £15,000 ($72,998).

# KNITTING

## FANCY KNIT VESTS.

POPULAR FABRICS FOR AUTOMOBILING, GOLF AND OTHER OUTDOOR SPORTS.

(*Contributed Exclusively to* COTTON.)

BY H. K.

With the increasing popularity of automobiling and other outdoor sports, there has been a demand created for knitted novelties, such as vests, sweaters, toques, mufflers and scarfs. A few years ago, specialties in knit goods were practically unknown. Today we find that the most successful manufacturers are those who have devoted themselves to specializing in these useful and ornamental articles of clothing. The popularity of knit fabrics has made its competition felt against its sister industry, the weaving trade. Especially in the manufacture of fancy garments this competition has been very keen.

The vast improvement made in knitting machinery has in great measure brought this about, with the assistance of "Dame Fashion." The elasticity of the knit fabric makes a more comfortable garment for the wearer and the large variety of stitches and colorings possible has made the knitted goods very popular. The skill and ingenuity of the sewing and overlocking machines play an important and prominent part in the finish of knit goods. With the aid

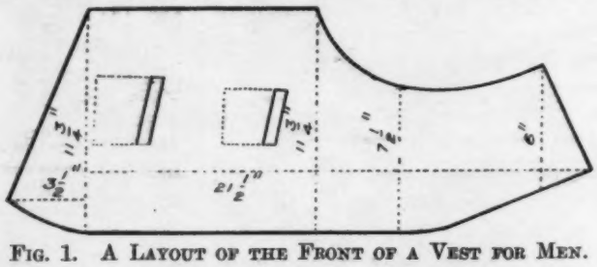

FIG. 1. A LAYOUT OF THE FRONT OF A VEST FOR MEN.

of these machines any kind of knit fabric can be seamed equal to a seam of a woven fabric. The amount of elasticity in the fabric can be reduced according to the length of loop and type of stitch. A waterproof finish can also be given which renders knit fabrics suitable for outer garments.

With greater scope for varying the stitch, if not the color, the knitting trade will for many years to come, prove a formidable rival of the weaving industry. A popular outer garment is that of the knitted vest for ladies' and gentlemen's wear. The fabric may be made in any of the following stitches; plain striped, striped rib, fancy rib, warp knit, jacquard, pearl, and fancy tuck ribs. The napping or brushing of the fabric which though often obscuring the knitted stitch, adds a warmth and coziness of appearance. The sportsman, the business man, the man at home, or the man abroad, can be furnished with a knitted vest to his taste. As many of these vests are made on hand flat jacquard machines, there is no difficulty in obtaining a vest of an exclusive design.

In knitting the fabric for vests, especially on flat knitting machines, the width of the fabric serves as the length of the garment. This enables us to have the vests with patterns of vertical stripes although made horizontally. Fabrics produced on a Jacquard open machine are also knitted in this manner. In the Jacquard fabric, the width of the fabric provides for the width of the front of the vest.

Flat machines knitting fabric for vests have wide needle beds, say from 30 inches to 40 inches wide and two or more

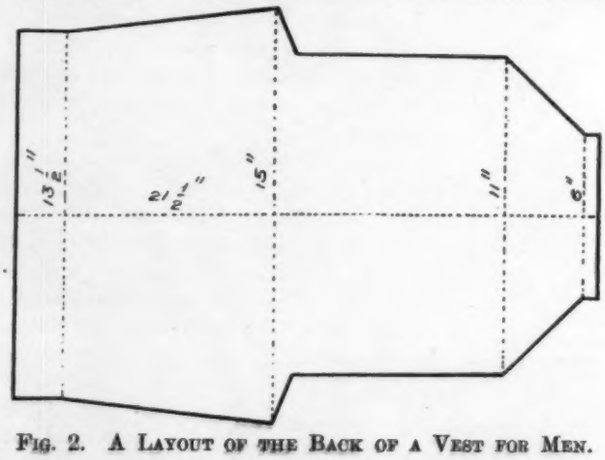


FIG. 2. A LAYOUT OF THE BACK OF A VEST FOR MEN.

heads to the one machine. The cam boxes may be double to allow of plated fabrics being made where the face color may be dark and the back of the fabric a bright and contrasting color. These machines may also be provided with automatic devices for racking the needle beds at certain intervals according to the pattern desired. The large variety of styles and finishes used are so varied that to try to describe them all would be out of the question. As in the case of custom made clothing so in this, a knit vest can be made according to individual taste.

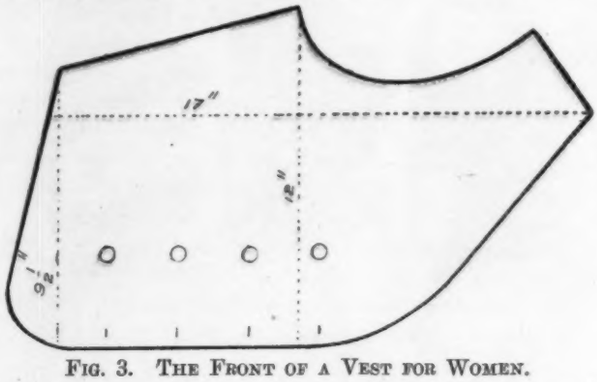


FIG. 3. THE FRONT OF A VEST FOR WOMEN.

Fig. 1 is a drawing of a front of the usual type of gent's vest. The dimensions given are for a 38-inch vest, but these may be varied according to the ideas of the manufacturer. The vest is cut the desired shape as if it were woven material. The edges of the fabric are now run through an overlock machine to prevent their fraying out. The drawing at Fig. (2) shows the lay-out of the back of the vest. The backs may be knitted on flat machines which automatically widens the fabric until it comes to the armhole and then automatically drops a certain number of needles, after which it continues to knit to the neck part

of the back. A separating thread knitted in at this point divides the one back from the other. The hand flat machine may be used to knit the back, where the widening and narrowing is done by the operator. The backs of the

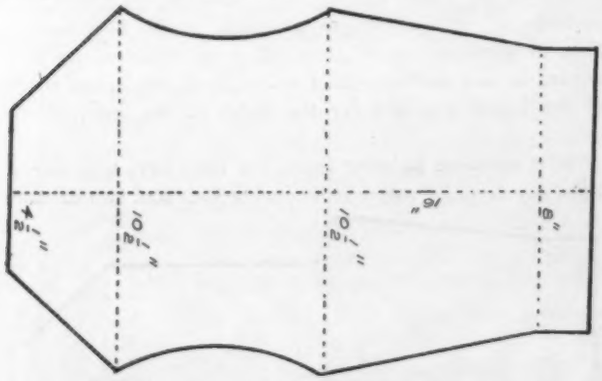

FIG. 4. THE BACK OF A VEST FOR WOMEN.

vests are knitted in a full cardigan stitch, this stitch being the more suitable for this part of the garment.

At the beginning about 2 inches is knitted and shogged and the fabric from this point is the ordinary full cardi-

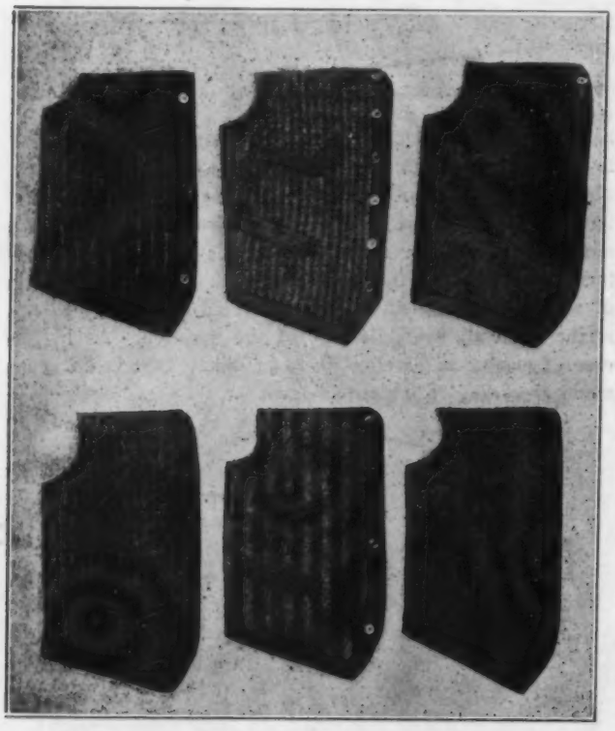

FIG. 5. SOME PATTERNS OF VEST FABRICS.

gan until the neck is reached when the stitch is again shogged for one inch. The edges of the fronts are finished with a braid binding, or what is better a binding knitted of the same yarn as the vest; or it may be knitted of some contrasting color which gives a pleasing effect to the finished product. The pockets being trimmed with the same edging as the fronts of the vest. Either plain or fancy buttons can be supplied. Behind the edging running down the fronts, a narrow strip of sateen cloth is put in to provide a strong backing for the buttons and buttonholes. The buttonholes are usually made by machine. The pocketing which forms the pockets is also knitted and is made of

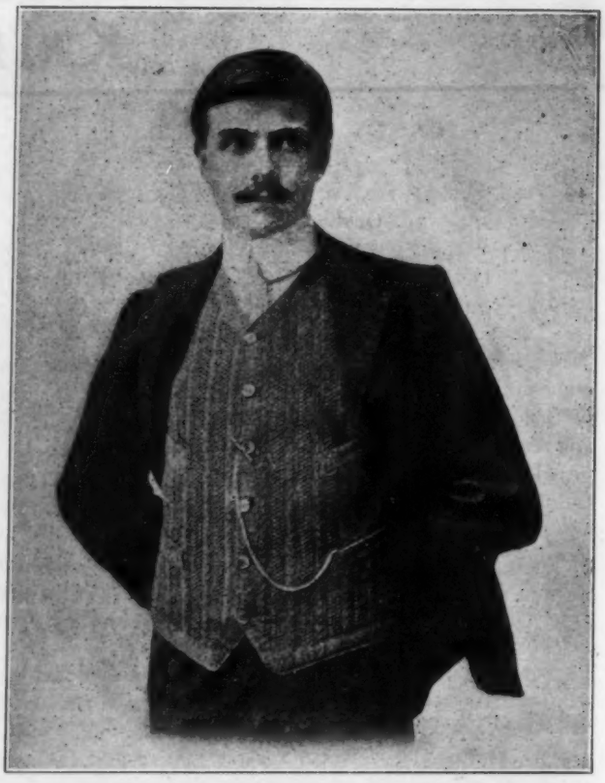

FIG. 6. AS THE VEST APPEARS ON THE WEARER.

one by one plain rib, being about 5 inches wide. A small circular ribber is a suitable machine for this purpose, the fabric is cut and the edges overlocked. Fig. (3) and (4) illustrate the cut out of a lady's vest. The garments are cut and finished in a similar manner to that described.

## KNITTING YARNS.

### SILK AND WOOL, WOOD PULP, SHODDY MIXTURE, AND COTTON YARNS.

(*Contributed Exclusively to* COTTON.)

BY WILLIAM DAVIS, M. A.

SECOND PAPER.

We have already examined the structure of the silk and wool hosiery yarn where the silk is present as a solid thread. Another method is to introduce the silk into the yarn in the form of fiber. To obtain the best results ,the wool selected should be of fine diameter. In Figure 1 we have a photo-micrograph of such a yarn, (single), where the presence of the wool can be readily detected by the greater diameter of the fibers, the silk showing very much finer in comparison.

Wood pulp is the material shown in Fig. 2 which finds a large use in knitted articles used for adornment, where the stitch and color are to be shown up to the best advantage. This yarn is suited for a clear and decided effect because little or no surface fiber protrudes and the fibers occur in long lengths absolutely parallel one with another. This fiber has a natural luster of its own as well as that which results from the even surface of the thread. Scarves knitted from this material in fancy stitch and color have been much in vogue for the past few years.

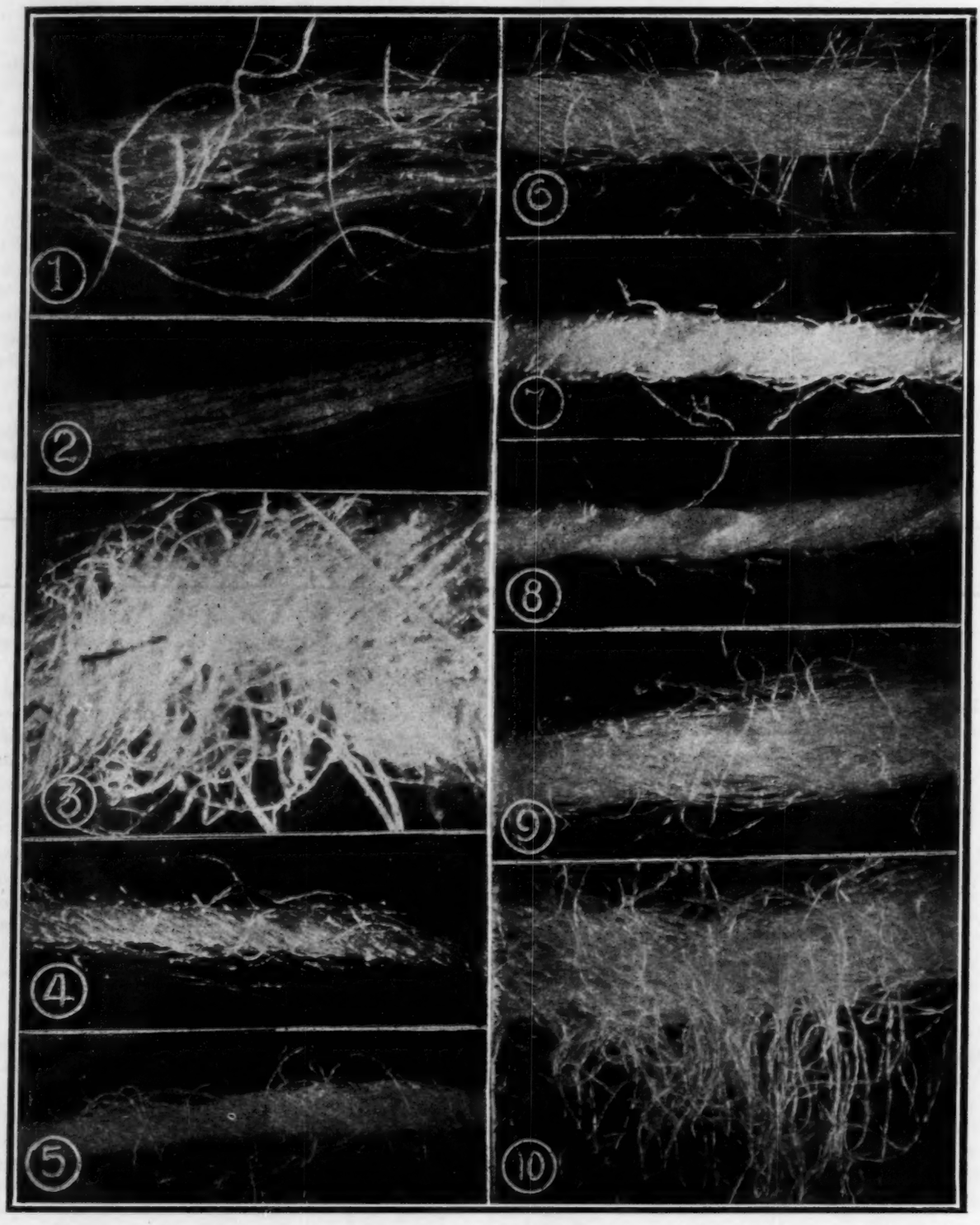


FIG. 1. SILK AND WOOL. FIG. 2. WOOD PULP. FIG. 3. COARSE LOW GRADE HOSIERY YARN. FIGS. 4, 5 AND 6 ARE FINE, MEDIUM AND COARSE COTTON YARNS. FIG. 7. TWO-PLY COTTON YARN. FIG. 8. MERCERIZED COTTON YARN. FIG. 9. FACE COTTON YARN. FIG. 10. BACK COTTON YARN.

Re-manufactured material is largely employed in the cheaper lines of knitting yarns, a typical example of which is shown in Fig. 3 which represents a yarn of coarse diameter. On this illustration can be noted a defect common to shoddy yarns and that is the variable diameter and irregularity of the thread. Towards the centre of the thread can be seen a portion thinner than that above or below. The admixture of coarse and fine material, the shredded nature of the fibers and the presence of small particles of foreign bodies are all characteristic of this kind of yarn. To produce the necessary strength with such a varied conglomeration, the thread is required to be firmly twisted and thus shows very dense.

The structure of cotton yarns as used for knitting has much in common with the cotton yarns used in other branches of textiles. Figs. 4, 5 and 6 show the appear-

ance of single cotton yarns varying from fine to coarse counts. In all cases the fibers are closely held together in the case of the thread, thus giving the yarn considerable strength; combined with this strength and density we do not find the material harsh to handle, but comparatively soft. The fibers are arranged more orderly and parallel than is the case with the woolen yarn, but there is considerable diversity in the form of the projecting material. Of this, Fig. 4 shows comparatively little and those which do project have a tendency to run parallel with the thread. Example 5 shows a greater portion of surface material, while in example 6 numerous long twists are to be noticed. The fibers also bend themselves in a manner peculiar to cotton. Such yarns are well suited to show up the stitch formation in fancy patterns and are largely used for lace stitch knitted fabrics.

Two-fold cotton yarns cannot be so well adapted for the general run of knitted goods because of the hard nature the thread assumes when folded. Example 7 shows a photo of a two-fold or ply cotton yarn where the two strands are seen to be wrapping tightly one around another and shows comparatively little surface hairs.

The mercerized yarn shown in Fig. 8 finds a large use for the fancy material employed in embroidery knitted articles. The torsion is very clearly defined and only small fragments of material project from the thread. This is, of course, necessary that the best results may be obtained in mercerizing. In the stretching, the fibers are welded more densely together and the lustre of the yarns shows up bright colors to great advantage.

Reference has already been made to the fact that the cotton yarn is clearer in surface and well adapted to show up figured effects in a fabric. To impart warmth and fullness of handle, we frequently have yarns of coarser diameter placed on the back, these being afterwards brushed and raised to make a fleecy surface. Examples 9 and 10 are taken from a fabric of this type. Yarn 9 is taken from the face of the fabric and shows very level on the surface. Yarn 10 is extracted from the back and the raised fibers are plainly seen on one side, where they have been dragged from the core of the thread by the teasles.

# DYEING, BLEACHING AND FINISHING.

## LEGAL AND OFFICIAL CHEMISTRY IN THE TEXTILE INDUSTRY.

A BRIEF REVIEW OF SOME IMPORTANT CASES RELATING TO THE TEXTILE INDUSTRY.

*(Contributed Exclusively to* COTTON.)

BY DR. FREDERICK DANNERTH, CONSULTING CHEMIST AND TEXTILE EXPERT.

In the present paper the author has endeavored to collate the most important textile disputes which have required the testimony of chemists and textile experts in recent years. So far as is known these cases have never been treated in a connected form. For this reason as well as for the reference value which they may have for textile manufacturers, importers and jobbers they are here presented. The material has been arranged as follows:

1. Suits in State and County Courts: The Stretch case; the Blue Benders case.

2. Suits in the Federal Courts: (a) Patent Infringement suits. The Mercerized Cotton case. (b) River Pollution suit. The Bancroft-Garrett case. (c) Insurance claims. The Burned Cotton case.

3. Customs House Cases. (Protests against the assessment of duty by the Collector of Customs): (a) Dyes,—the Indigo case. (b) Textile chemicals,—the Cutch case. The Olive Oil case. (c) Textile fibers and fabrics,—Boiled-Off Silk case; Mercerized Cotton case.

### THE STRETCH CASE.

The Kursheedt Apron Co., New York City, vs. Standard Bleachery Co., Carleton, N. J.

An action to recover $225,000 for loss sustained, by the extra yardage alleged to have been obtained by the bleacher, not having been returned.

FIRST TRIAL. Heard in the Circuit Court of Bergen County, New Jersey, before Judge Minturn and a jury, December 16, 1907.

VERDICT: For the defendant.

SECOND TRIAL began March 29, 1909. The new evidence introduced consisted for the most part of testimony of former employees of the bleachery who had been discharged or who had left the employ of the company with a grievance.

VERDICT: Jury disagreed.

SYNOPSIS: The plaintiff had delivered to the bleacher over three million yards of 40-inch lawns and averred that the gain, obtained by bleaching and finishing these gray goods, was not returned to the plaintiff. Defendant showed by experts that goods which are held out to their full gray width do not stretch to any appreciable extent. Plaintiff averred that he should have received a yardage equal to a "two per cent. gain" and that this gain was sold by the bleachery to a rival concern in Boston, who were thereby enabled to offer aprons to the trade at prices lower than Kursheedt could afford to quote. Defendant showed that the merchandise sold by the Boston firm consisted of remnants and seconds. A "remnant" was defined as "the end of a piece which is imperfectly finished, and which is cut off to allow the entire piece to be of the same standard of finish. A remnant may be of a length equal to five yards or under." A "second" was defined as "seams or imperfect spots which have to be cut out."

The defendant admitted that when the goods were allowed to "shrink in" from the required width, a gain could be secured. It was further shown that when the goods are held out to their full gray width the filling thread, being pulled taut, draws back the warp and often causes a loss rather than a gain. While in certain isolated cases a slight gain might be secured owing to the possible looseness of weave, or other characteristic of construction,

this was more than offset by the shortage in other pieces. The plaintiff admitted that the bleacher was entitled to all remnants and seconds. An entirely new suit was instituted by the Kursheedt Company for approximately $5,000, in the Circuit Court of Bergen County, N. J., and was heard before a jury November 15, 1909.

VERDICT: For the defendant.

THE BLUE BENDERS CASE.

Arkwright Mills, cotton goods manufacturers, of Fall River, Mass., vs. The H. B. Claflin Co., dry goods commission merchants, of New York City.

An action to recover $2,148.48, being the balance due on 4,520 pieces of cotton muslin. (Breach of contract.)

Heard before Judge William H. Fox (acting as Auditor) at Taunton, Mass., June 15, 1908. The decision was in favor of the plaintiff.

SYNOPSIS: The question to be decided in this case was essentially as follows: If it is impossible to bleach a cotton fabric a perfect white, can that fabric be delivered on a contract which calls for a fabric of "first quality."

Defendants claimed that prior to the year 1900 when the contract in question was made there had been no question about the use of this inferior grade of cotton in goods which were to be bleached as there was a tacit understanding that this quality of raw material would not produce fabrics which could be bleached a pure white. In the year 1900, due to the increased price of raw cotton, the above mentioned quality (blue bender) was used, with the result that the fabric after being subjected to the usual bleaching process was not merchantable and could not be sold by the defendants to its usual customers. The facts of the case are substantially as follows: In September, 1900, the H. B. Claflin Co. signed with the Arkwright Mills a contract for the delivery of 10,000 pieces of 38½-inch, 64 x 64 standard gray goods. After several lots had been bleached, it was discovered that the white was defective. Claflin then canceled 4,520 pieces and later sent to Arkwright Mills a check for $2,724.31, whereupon Arkwright instituted suit for the balance due ($2,148.48). The report of the auditor is given below in abstract:

"The defendants claimed that the cloth furnished was not first quality because, as they held, it would not bleach, and the question came whether capacity for bleaching was or was not one of the things to be considered in determining the quality. The court finds that goods are classified as to first and second quality, depending on their imperfections, as to scratch-ups, thick and thin places, holes and uneven yarn. He does not find on the evidence that this classification depends on the bleachable quality of the cloth, and that therefore that this cloth comes within the definition of 'quality first' required in the contract. I may add that there was nothing in the sale note which indicated to the seller that these goods were intended for the bleachery. Goods that are to be bleached are usually 38½ inches wide, but goods of that width are used for other purposes.

"The question presented at the hearing, whether the goods would bleach, therefore, becomes unimportant, but I have considered it and make a finding upon it. A sample of cloth made by the plaintiff from the same kind of cotton and sent to a bleachery was shown to me as evidence. To my unpracticed eye it seemed to be a white cloth, but I have no doubt that, speaking exactly, one would say it was not a perfect white. Indeed, I do not know that any cloth is perfectly white. But upon the evidence in the case, including testimony from persons engaged in the bleachery business, I find that cloth made from the blue bender cotton cannot be bleached to the same degree of whiteness as cloth made from other cotton.

"In accordance with my finding as previously stated, I do not find that there was any breach of contract by the plaintiff."

The writer has recently defined Bender cotton as the name applied to the product which is picked along the bends of the Mississippi River. It is long and of good quality, and much of it is doubtless Peeler. "Blue Bender Cotton" is a substance possessing properties not characteristic of the commercial article sold as cotton. For example, spinners and weavers apply the term "cotton" to a substance which is completely whitened when boiled off with caustic soda and subsequently bleached with chloride of lime. In the case of "blue benders cotton" we have a substance which contains a coloring matter which can not be destroyed by the processes just mentioned. Hence, this article must be considered as materially different from the substance known in commerce as "cotton." Blue benders cotton is in fact an alteration product of normal cotton, just as oxy-cellulose and gun cotton and mercerized cotton are alteration products. Mercerized cotton is recognized by the fact that it possesses more luster and increased affinity for basic dyes, while gun cotton can be recognized by its solubility in Hoffman's mixture and the ease with which it takes fire.

Blue benders cotton is recognized by its peculiar color and the fact that it can not be bleached a pure white by the methods in common use. These peculiarities of blue benders cotton are apparently due to the fact that a physiological change has taken place within the cotton fiber. The fiber is a cell filled with astringent juices and these juices are changed to neutral and saccharine compounds by the photo-chemic action of the sun's rays. Finally all is converted into cellulose, which is the main constituent (83.71 per cent.) of the cotton fiber, as is shown by the following analysis:

| | |
|---|---|
| Cellulose | 83.71 per cent. |
| Water | 6.74 per cent. |
| Nitrogen, free extract | 5.79 per cent. |
| Ash | 1.65 per cent. |
| Protein | 1.50 per cent. |
| Fat | 0.61 per cent. |
| Total | 100.00 per cent. |

Under ordinary conditions, the cotton cell ripens and dries, but if the usual physiological change is interfered with, by the presence of excessive moisture and exposure to frost, a decomposition of the cell juice takes place and the fiber is discolored. I am of the opinion that "tinged cotton" "stained cotton" and "blue benders cotton" are closely related and owe their chemical and physical properties to similar causes. In order to produce a "perfect" cotton fabric it is necessary to use "perfect" cotton, because the quality of the product can not be better than the raw material. Blue benders cotton is obviously imperfect and hence is incapable of yielding a perfect or a first quality fabric.

John P. Farnsworth, a cotton bleaching expert, subsequently expressed the following opinion:

"The problem is not a new one. I have been in the business of bleaching cotton piece goods for some 27 years, and I do not remember a time when there was not more or less trouble with 'black cotton' as we call it. Sometimes goods appear to be made wholly of it. Sometimes it appears to be mixed, before spinning, with white cotton, and at times we find it in warp or filling alone. These variations probably occur when the mill is changing cotton and either putting in or getting rid of a lot of 'blue bender.'

"At the time the goods in dispute were made there seemed to be a quantity of this cotton on the market. I know of one finisher who manufactures his own grade of cloth to a certain extent, and who prides himself that the goods he turns out are as near perfect as they can be made. At this time he came to me in despair with a sample of 'blue bender' cotton of which he owned and had spun quite a quantity, and found himself unable to bleach his products so as to be salable. After consultation with a number of other finishers he sold his 'blue bender,' both in yarn and bale, and bought, as he buys now, only white, clean cotton.

"We were, at the time, doing goods for the same purpose as those which Claflin was producing, and our correspondence shows that we refused to be responsible for the color of the finished product. The reason that this cloth did not take such a white as Claflin expected, and as was needed to make the goods merchantable, lies in our present knowledge of the treatment of this grade of stained cotton. I am using the word stained advisedly, because from inquiries among cotton brokers for samples of this cotton, they speak of it as 'stained.'

"The auditor, in his report to the Superior Court, speaks of this cotton as growing upon the bends of the Mississippi River 'after' the land has received a deposit of mud brought on by freshets. I am not able to verify this statement, which was drawn from the testimony of cotton brokers at the hearing. It would seem, from what I am able to gather, that the cotton had suffered from the freshet when well grown.

"Minutely divided and clinging to the fibers of the cotton is a dark coloring matter apparently of a clayey nature. This is probably insoluble in any agent that will not attack the cellulose of the cotton fiber. It is certainly unchanged by any of the ordinary chemicals used for bleaching. Mechanical treatment long continued, with washings between, seems to eradicate a portion of the color, but this treatment finally wears out the cloth before the goods are white enough to pass muster. Of course in finishing goods some little account must be taken of the expense, and even if such goods could be made perfectly white by continued mechanical treatment, the margin on such goods is so close that no finisher would undertake to guarantee white goods, except for glory.

"Under the decision made by the Superior Court of Bristol county, Massachusetts, it would seem that any converters buying goods from a mill likely to use 'blue bender' cotton should exact from the seller a guarantee to use only such grade of cotton as can be bleached by the customary processes."

### THE MERCERIZED COTTON DECISION.

The American Mercerizing Co., et al. (Philadelphia) vs. The Hampton Co. et al. (Easthampton, Mass.).

An action in equity to restrain the infringement of letters patent No. 600,826 issued to Thomas and Prevost for improvements in processes of mercerizing vegetable fibers and No. 600,827 issued to the same persons for improvements in treating vegetable fibers or fabrics for dyeing purposes. The original bill of complaint was filed November 28, 1900, and the report of the referee was filed in 1906. The case was argued before Judge Lowell in the U. S. Circuit Court of Boston, Mass., April 3 and 4, 1906. The decision was rendered August 7, 1906, in favor of the defendants. In this opinion it was held that the patents granted to Richard Thomas and Emmanuel Prevost, March 15, 1898, were invalid.

The opinion of the Court shows Lowe to be the actual pioneer, for he states that tension is requisite and that a gloss is obtained. In 1889 and 1890, Lowe took out two patents in England, Nos. 20,314 and 4,452. In the United States, Lowe's invention belongs to the public and as the claims of Thomas and Prevost are anticipated by the British patent to Lowe, the bill was dismissed with costs.

### RIVER POLLUTION SUIT.

Joseph Bancroft & Sons Co., finishers and dyers of cotton goods (Wilmington, Del.) vs. C. S. Garrett & Sons Co., paper manufacturers of Philadelphia.

A suit in equity to restrain the defendants from discoloring the water of Brandywine Creek so as to render it unfit for the use of the complainant mills in the manufacture of its products was entered in the U. S. Circuit Court at Philadelphia, November, 1909.

SYNOPSIS: The plaintiff declared that it had owned and operated mills on the Brandywine near Wilmington, Del., since 1881. As owner in fee of all properties on both sides of the creek, it claimed to be the sole owner of the water rights for that portion of the flow running through the land on both sides of the creek owned by the firm for a distance of nearly four-fifths of a mile. All of the property had been used for the purpose of conducting its business of spinning, weaving, dyeing, bleaching and finishing cotton goods, which required at all times pure, unpolluted water. The bill also states that in 1907-1908, the average yearly output was over 125,000,000 yards valued at over $12,000,000; and in the year of 1909, up to November 1, the output was 145,000,000 yards valued at $14,000,000. For the four years prior to 1909 the complainant asserts it employed about 1,500 employes daily, and at present employs about 1,760 daily.

The complainant also states that the defendant company operates a mill for the manufacture of paper in Chester County, located on a stream called Buck Run, which empties into the west branch of the Brandywine. At divers times and for over two years it is alleged that the defendant company in operating its mills has placed and deposited in the waters of Buck Run, certain aniline dyes, coloring matters and other chemicals, which flow past the property of the complainant, with the result that the water becomes impure, discolored and polluted, and absolutely unfit for use. That whenever this water was used, the products of the complainant were damaged and discolored and rendered unfit for the purposes for which they were manufactured. As a result the Bancroft Co. has been forced to cease using the water so discolored, and during these periods all of the departments requiring the use of pure water had to be closed, to the irreparable damage to the business.

On every occasion when the water was so polluted, it is asserted, complaint was made to the Garrett firm, which admitted the placing of aniline dyes in Buck Run, but promised to stop it, and in fact did stop from time to time, but whenever its mills were operated the stream was again discolored. The complainant alleges it fears the defendants will again pollute the water, unless it is restrained by order of the court, and asks that a perpetual injunction be issued to restrain the defendant from operating its mills so as to corrupt the stream. Also that an account be taken of the loss and damages suffered by the complainant, and that compensation be made by the defendant.

The defendant answers that if the Bancroft Mills had proper filters, they could readily remove the slight trace of color now in the water. This contention is based on the opinion of a filter expert. The Garrett Company uses aniline dyes in the manufacture of paper, and it is the red dye which is the chief source of complaint. They also assert that they have been endeavoring to secure a red dye that would not discolor the water, and have also tried to prevent the dye from going into the creek by building dams to back the water up into a pond, and using the water over again, further claiming they have reduced the color in the creek from 85 to 90 per cent., so that it is only a trace. They also declare they have a plant not far from the Bancroft mills, manufacturing white paper, and that at this plant they operate filters which completely remove all traces of color, and that it does not interfere with this work. The case has been postponed, with no definite date as yet fixed.

### THE BURNED COTTON DECISION.

George H. McFadden & Co., cotton brokers of Philadelphia, vs. The Liverpool, London & Globe Insurance Co., of New York City.

An action to recover insurance on a quantity of raw cotton which had been destroyed by fire while stored in a Brooklyn warehouse under a policy of the defendant company. According to this policy the liability of the company was limited to the actual cash value of the property insured, at the time the loss or damage occurred.

The testimony showed that the fire started early in the morning of June 8, 1895, and that it was under control by 6 o'clock of the same day. The fire, however, continued burning for several days so that the cotton could not be removed for nearly one week. During this time the reports of the fire had caused an advance in the price of cotton. The plaintiffs contended that their cotton was not damaged until some time after the fire had started, and that their cotton therefore had a higher value at the time when it was actually destroyed by fire. The defendants claim that the price of the cotton should be its selling price at the time when the fire first broke out.

DECISION: In favor of the plaintiffs. The price of the cotton was fixed at 8.55 cents a pound.

This case was taken to the Circuit Court of Appeals and heard before Judge Archibald in Philadelphia.

DECISION: In favor of the plaintiffs. "The terms of the policy are clear and must be adhered to. The extent of the company's liability is not the cash value at the time the property is exposed to the damage or loss by the outbreak of the fire, but the actual cash value at the time the loss occurs, which is necessarily to be referred, if material, to the time when in point of fact, as nearly as can be ascertained, the fire reaches and consumes or damages it."

## TESTS OF VARIETIES OF COTTON IN 1910.

In 1910, in a test of 22 varieties and strains of cotton on the Alabama Experiment Station farm at Auburn, Ala., the varieties affording the greatest total value of seed and lint per acre were the following, named in order of productiveness:

| | TOTAL VALUE PER ACRE. |
|---|---|
| Cook (Stone) | $79.05 |
| Dillon | 73.95 |
| Hardin | 71.33 |
| Cook (Hall) | 69.29 |
| Triumph | 68.62 |
| Russell | 67.49 |
| Dixie | 67.32 |
| Cleveland | 67.14 |
| Poulnot | 65.99 |
| Ruralist | 64.74 |
| Covington-Toole | 64.21 |
| Cook No. 304 | 58.84 |
| Cook No. 313 | 58.68 |
| Broadwell | 57.06 |
| Early Mammoth | 56.97 |
| Bank Account | 55.77 |
| King Big Boll | 52.62 |
| Sugar Loaf King | 51.88 |
| Cook No. 354 | 50.73 |
| Cook No. 307 | 50.55 |
| Cook No. 333 | 48.95 |
| Trice | 39.25 |

The above figures are based on lint at 14 cents per pound, and seed at $26.00 per ton, and a uniform stand of plants on all plots. The cotton was planted May 2d on a cold, poor, sandy soil, and fertilized at the rate of 480 pounds per acre, with a home mixture consisting of acid phosphate, muriate of potash, and nitrate of soda. In the variety test of the last five years we find, in the list of the five most productive varieties each year, that Cook occurs among the leaders in each of four years; and that Cleveland, Toole, Dillon, Hardin, Dixie, and Poulnot, was each included twice in the five most productive varieties.

The Cook variety, on the whole, is very liable to severe injury by boll rot (anthracnose), but Cook from seed of a crop in which there has been little or no boll rot is apt to escape great damage from this disease. This partly explains why, in 1910, Cook seed grown in certain localities made high yields; while Cook from other seed, badly infested by boll rot, made much smaller yields. Some other varieties below the middle of the list were also severely damaged in 1910 by boll rot, and no variety entirely escaped this disease. Dillon has the same tall, slender, cluster plant as the well known Jackson. Its chief value lies in its being resistant to wilt or black root. Hardin is a rather late variety, with bolls of medium size. Triumph has large bolls and is medium early. It has no conspicuous faults. The earliest varieties in this list are Broadwell and King, which are alike in appearance of plants, in the small size of bolls, and in the falling out of seed cotton from the bur. The Alabama Experiment Station cannot supply seed of any variety.

# Practical Problems Discussed by Cotton's Readers.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all.

## THE COTTON INDUSTRY AND ITS MANAGEMENT.

BY O. A. B.

The dawn of history shows man using various fibers for the manufacture of cloth. The Hindoos may be given credit for the first use of the cotton fiber for manufacturing purposes. Early records show that it was known and used as early as 800 B. C. Herodotus, 445 B. C. and Mearchus, 327 B. C., both mention cotton cultivation and manufacture in their writings of India. Pliny mentions cotton occuring in upper Egypt where it was called Gossypium and was used for the manufacture of cloth.

Columbus, in 1492, found cotton growing in the West Indies and the natives of the islands and also the mainland skilled in the manufacture of cloth, fish lines and nets. Cortez, in 1519, found cotton in Mexico and used it to stuff the clothing of his soldiers as a protection against the arrows of the indians. It was also found growing in what is known now as Louisiana and Texas as early as 1522. We find that the first practical attempt at the cultivation of cotton in this country was as early as 1621, though there is evidence of an earlier attempt in a simple way. But from the time of the erection of the first cotton spinning mill in Beverly, Mass., in 1787-1788, and the first power loom in Waltham, Mass., in 1815, there has not likely existed a more demoralized state of affairs in the cotton mill industry than that of the present day.

Yet this industry, since that day, has grown and flourished most wonderfully in the meantime. What is it then that has caused such a halt in its progress when all other industries are apparently flourishing? Another question may be asked, and that is, why will mill managers buy cotton and make goods at a considerable loss?

Mill managers are cutting their own throats, so to speak, when they cut prices below the cost of production just simply to keep their spindles going. Combination is necessary. When prices are so abnormal on goods as at the present, all should pull together as one and shut down until the business justifies operation again. The mill man should get control of the cotton market, and to do this all should combine and say to the speculator, we will not buy when the price is so far above its value. We will say what we can pay and will pay for cotton.

Every man for himself seems to be the course of events of today. How long can the cotton mill industry stand at the rate of backward progress it is making today, caused by lack of integral combination. If the mill man is not responsible for high priced cotton, he is responsible for the decline of prices for finished goods, by not standing "patt" by prices, which he should in all honor and justice have.

It was a question among the stoics whether there was any medium between pain and pleasure. It is a question today among the cotton manufacturers whether there is a medium between prosperity and adversity. Were Socrates, Aristotle, or Plato to arise from the dead, they would stand amazed at the moral advancement of civilization, but were Hedrick, Decart, Bean, Humphreys, and other pioneers of the cotton mill industry to rise up, they would stand chagrined and perplexed to find that the business of the industry was so fearfully demoralized.

Nevertheless, notwithstanding the present conditions are admittedly bad, we hope for better times soon. There is a curtailment wave that is spreading, and if only it reaches wide enough and continues long enough, with a combined firmness of prices, conditions must change for the better. The curtailment plan and shutting down altogether make it hard for the mill employees, but as superintendent of a yarn mill at present, I would rather close down and do something else for awhile, than to continue running under the present conditions. It is not advisable to run on.

Now a few words in regard to real mill management as the outgrowth of experience in practical mill work. The management of the help will receive my first consideration; and this phase of mill management puzzles even the most experienced managers, and is a rather delicate subject to write upon. One's power of conception of human nature in different individuals goes no little way in successful management. One must have tact and personality to have influence over the operatives.

One can learn the principal of each machine in a mill and get the theory and process of manufacturing from books, if he does a little systematic studying, but one's disposition to get along with mill help depends upon what he makes it. Thus we find that machinery has system, which system is the secret of its success when used and not abused. So can man have system and must have, before he can succeed as a manager. There is never any necessity for abusing any person to get work out of them, but we often find such methods resorted to, and some even maintain the idea that in some cases it is absolutely necessary.

This is absurd. It is a false presumption unsustained by the logic of facts. Assume yourself as being the one receiving the abuses of another and see how you will like it. Suffice to say you would become indignant and crave for revenge. One can be firm and must be firm in a business-like and earnest way in what he demands and requires of those under him.

It is best to say as little as possible to them, and then say it in a firm and business-like way. Don't be too sociable, but always be courteous. It is always best to endeavor to follow the golden rule and do unto others as you would have them do unto you, for contempt certainly breeds contempt and likewise pleasantness begets pleasantness.

In a brief discussion I will take up the process and cost of manufacturing. During the many processes through

which the cotton must pass before a finished product is ready for sale, every process should be carefully looked after and each machine should be made to do its proportion in developing and presenting the finished goods. The waste must be the very least possible. Carelessness and indifference of operatives must be supplanted with strictness of system and regulation for maximum production and minimum amount of waste, as waste is an expensive item and production is the life of the plant.

The pay roll should be carefully studied to suit the conditions for the least cost of production. Each job should be compensated according to what the operative really earns. A well regulated system of bookkeeping would be an advantage to any mill manager, as he will know at any time the numbers and variation of numbers of yarn that are made in a spinning mill, and likewise the width, length, weight and patterns of cloth made in a weave room, if he posts same from day to day.

The cost of supplies used, the total cost of labor, fuel, cotton, freights, drayage, commissions, salaries and sundry expenses are usually kept by some one in the mill office, but the mill manager could greatly aid in finding the total number of pounds of the different kinds of waste, and productions made. As more capital is invested in machinery than in anything else about a cotton mill, it should receive good treatment at the hands of the operatives. Every piece of machinery that is broken necessitates the expense of a new one and machinery should therefore be handled with care.

A good rule to make operatives careful is to make them pay for all parts broken through carelessness. I find that it works well. The wear from the lack of oil is another expensive piece of carelessness which is twofold: first, it requires more power to drive machines; second, it causes friction which depreciates the value of the machine much faster and is liable to cause fire from frictional heat. At all times machinery should be carefully guarded.

It is a well known axiom that if a machine is not allowed to become crowded with lint and fly, motes, dirty stock and oil, that a better grade of goods can be made. Especially is this true in a yarn mill for if there is oil smeared over the machine, it will get into the yarn and loose dirt, lint, and motes will be caused by a little current of wind to become entangled in the yarn which will cause lumps.

Heavy tentions will cause cut yarns. Uneven and dirty laps and slivers cannot be remedied at any future process and bad yarns will result. Lumps, or loose cotton on the base or in the collars of top rolls will retard speed of rolls and cause breakages and injury to rolls. Cotton wrapped around steel rolls will cause uneven yarns. These and many other evils can be avoided by intelligent system and close attention to duty on the part of the operatives. The overseer or superintendent should see to it that all times set for attending to regular and necessary duties are regularly spent in doing those duties. By the unfolding of the latent powers of the mind and close attention to the little things and regular duties in and about the mill, the individual manager becomes the architect of his own destiny in this great and important industry.

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The drapery and outfitting trade is benefiting to the full by the South African prosperity, and an individual expression of it is found in the 6-story building being erected in Johannesburg for Norman Anstey & Co.

## MULES, TWISTERS AND SPOOLERS.

BY W. C. H.

### MULES TO PRODUCE GOOD WORK.

The mules should be properly and thoroughly oiled and cleaned at regular times. The rolls should be properly cared for. The top rolls recovered with the best of material when defects develop. Good rolls will get off good production of good even yarn with but little waste. Poor rolls decrease production by breaking of ends, etc. The belts and large band should be cleaned and dressed at regular periods to prevent shippage and excessive wear. Banding should be stretched before useing. Great care should be taken in splicing bands. All parts should be properly set and adjusted to act at the proper time for the counts of yarn to be spun, and not excessive or insufficient amount of tension, twist, roll delivery, ratch, or gain.

The spindle and roll speed should not be too high as this will not give first class quality of yarn. The clutches and cone friction should be properly adjusted. Great care should be given to leather coverings on the faces of cones and friction. Incorrectly proportioned draft causes uneven yarn. The roller levers should have their weight hung on the same notch the length of mule. Rolls should be set that distance between so they will only be slightly longer than the average length of fibers or staple. Smooth bottom steel rollers will cause bad work. The winding faller not unlocking properly will cause bad yarn. Mule yarn is usually used in America for filling yarn for weaving hosiery and underwear. Great care should be given to the mules to produce smooth yarn of first quality. Defective yarn to be looked after are uneven yarns cut yarn, cockled yarn, kinky yarn, overstrained yarn, and dirty yarn. Defective cop bottoms, soft and ridgey cops and waste.

### TWISTING PLY YARNS.

Great care should be taken to have all the bands the same diameter and at near the same tension as possible. All parts that require oiling should be thoroughly oiled and cleaned at regular intervals. Spindles, rings and travelers should be kept in the best condition and slack twist, corkscrew yarn and oily, dirty yarn looked out for.

### SPOOLING.

The spooling machine is simple, yet much waste and bad work is made by spooling. Do not allow tenders to blow off with blowers or fans. Make them brush and wipe off their machine. Keep the thread guides set close, only let a weaver knot pass through and have friction enough on the thread to wind a firm spool. Do not fill the spools too full, as the thread will pull over the heads in the warping process or at the twisting frame. Quantity is a very important point to watch, for if you get it at the spooler you will surely get quality and quantity at the warpers and slashers. Poor spooling means poor warp and much waste. Poor warping means bad slashing. Poor slashing means bad weaving. Bad cloth means a big loss to the company.

### SPINNING ROOM.

Rolls should be kept clean and properly oiled, always having plenty of newly covered spare top rolls on hand, so the spinners can keep their rollers in good condition. Set the rolls a trifle further apart than the average length of staple of cotton being spun. Keep the frames level. Teach your second hand and section hands to attend to business and see that the help under them are working for the interest of the company. See that the spindles are well oiled.

Keep the spindle pulleys or whirlers free from waste and lint so the bands can work in their proper places. If one has enough cotton around the groove it will cause the spindle to run slower than one that is properly cleaned and will cause a little less twist. To keep all spindles running, have a good band boy. When a spinner keeps piecing up the same end often in spinning one set of yarn, look into the matter and see what is the trouble. The spindle may be bent or off center, or the ring may have got out. Perhaps they are worn. Sometimes a little lint getting into the groove of the whirl will cause the thread to keep breaking, or if the guide wire gets a little wrong the result is the same. When the rings begin to trouble a very good plan is to get a set of new rings for one frame and replace the old ones with the new ones; then with the old rings repair the rest of the frames, then better spinning will result than if you mix the new rings all through the room.

The overseer must bear in mind quality first, quantity second. If the spinner receives a good roving with a draft of 6, there is no reason why he can't get production and quality. Waste is very important. Teach the help the loss to the company in making waste. Always keep an extra doffer boy around so that he can help out when too many frames doff together, or when one of the regular doffers is sick.

## CARD ROOM NOTES.

BY W. S. H.

The setting of the rolls; the twist tension; the setting in of drawing; and the piecing up of ends are the chief points to watch on this machine. In cleaning a slubber the attendent should be taught to wipe off the frame and roller beam and not to blow or brush them off as the most of the lint goes back into the work. After the twist is found to be right and the draft from 4 to 4:50 the right way, then get just tension enough to carry the ends through the set without straining them. To prove this run the ends with one tooth less tension. It is a good idea to try these frames running two or three teeth slacker tension as if it is possible to make it work, it means larger production and better yarn. Never let the tender wet his piecings or bad work will be the result at the next machine.

INTERMEDIATE.

Teach your intermediate tenders to clean their machines. If the draft in slubber is four, the draft in the intermediate should be five. Set the rolls a little further apart than the average length of the staple of the cotton used. Teach the operative to be tidy around his work and the second-hand and section-hand to keep all the spindles running. See that the rollers are all kept in good condition. Twice a year every frame should have the steel roll taken out and scoured and the back rolls replaced with middle rolls. If solid rolls are used the middle rolls should be replaced with new rolls. If the front row of rolls are shells have all the bad ones removed weekly. When replaced be sure the shells that go on one arbor are both of the same diameter. With proper twist, tension, oiling, and cleaning good work will be produced.

FLY FRAMES.

If intermediate roving is used for back roving with a draft of five, the draft in fly frame should be six. This roving usually goes to the spinning room to be reduced into yarn. On the slubber, intermediate, and fly frames, cleanliness is a very important part to look after. Teach the tenders to be very particular when setting their roving in the creels not to wet their fingers to splice the roving together or piecing up ends for when the wet splicing is dry and comes to the next process it will surely pull between the roll hard and crease the roll and spoil it.

## THE CARD ROOM AS SEEN BY A CARDER.

BY J. H. S.

This subject has been much discussed, but there is a lot yet to be learned about carding which is a very important operation in mill work. If anything goes wrong with any part of the product of a mill, it is generally traced back to the card room. If the carding is bad, it will be sure to come back from the weave room, and perhaps before it reaches that point. One of the troubles is the grade of cotton often used; another is the make up of the mixing by some one that does not understand the running of cotton. This is the general practice in some mills, but if the work is properly done and is not of a first-class quality, the carder must stand for all the blame when perhaps he did not have a chance to remedy the trouble until too late. Sometimes there is a good mixing, but so seldom as to seem an accident. The carder has many troubles. The spinner comes with bad running work which, if looked into closely, is found in many cases not the carder's fault.

They bring dark yarn to the carder, but the authorities know that good roving can not be made out of bad cotton or white yarn out of dark cotton. A man in the office can pick out a mixing for some one else to have trouble with and not realize the results. If all this was left to the carder, there would be less trouble all over the mill. Generally a carder's troubles start back on him from the weave room by the way of the spinner, who always claims he has nothing to do with it, as he just runs what the carder sends up to him. However, the spinner is responsible for a lot of the troubles that a carder has to stand for. A spinner is responsible for weak yarn. A lot of spinners will put too much twist in their yarn, this causing it to be brittle and have no stretch in it; then they claim the carder has not set his machines right. Sometimes lumps come from the weave room to the carder with a complaint that the cards are not properly set or not properly ground, but if the trouble is looked up it is generally found on the spinning frame.

Not enough care taken in putting up the ends on a frame and that makes lumps. A slack belt on a spinning frame will also make lumps. A carder should be very watchful of his machines, or else he is sure to have trouble occur in his room sometimes. If complaints come of uneven work when there is a good grade of cotton, go to the picker room. The automatic feeders may not be working uniformly, or slack belts cause the same trouble if not closely looked after. When these things are all attended to and adjustments made if needed, then go to every machine and see that everything is put in the right shape for good work.

The great trouble about a card is the setting of and leveling it. If a card is not level, it can not be set to a gauge. Every man who is a carder has a different method of setting, so it is not necessary to advise a setting for a

card unless asked for it. Besides it takes different settings for different grades of cotton. The card should be set so it will make the web uniformly and free from lumps. If a fleece can be held up before the light and is free from nibs and lumps, it is called good carding. If it is not free from these troubles, the card should be looked after, or it will cause bad work.

There are many opinions about how often a card should be ground and leveled. Have a system for grinding and leveling. A card should be ground over and leveled a little before it needs it, or it will be too late to save the card and that will cause a lot of trouble and expense. A card should never be run over three weeks without being ground and leveled. Sometimes the cylinder will begin to rub on the casing or arches. This is generally caused by not leveling a little before the card needed it. Sometimes this may be caused by one end of the shaft being worn more than the other, but this is not apt to occur if the oiling is carefully attended to.

Uneven carding may result from split laps, uneven laps, dull clothing, or where something has been run through the card and mashed down some of the clothing. The setting of the doffer may result in trouble if it should be set farther from one end of cylinder than the other. This seldom happens when a card has been properly set. The flats are an important part and should be carefully looked after.

## NOTES FOR THE PICKER TENDER.

BY W. S. H.

Select bales of cotton of one grade, but of different lots for one week's work. If the room is large enough lay them around the mixing bin. Take off the hoops and sacking and pick them clean before bundling them. Mix the cotton by throwing a roll of each bale in the bin. Have men, or boys, to break the cotton or loosen it up while the men are throwing it in the bin. Keep two bins for cotton so as to have one week's cotton opened up airing while you are using another week's supply. If a bale breaker is used place as many bales around the machine as possible and feed some of every bale so the different lots of cotton will be well mixed.

A very good way to use up the waste is to feed it between two breaker laps. Use one of these with three cotton laps on the intermediate breaker. Mark these laps and use one on the finisher picker with three clear cotton laps. If this is done the yarn will run evener and break stronger than it otherwise would.

It is very important to keep all machines clean. Wipe off the beater with waste or cloth twice a day. Clean the cages, draft chambers and ends of bonnets twice a day; and around calender rolls and delivery rolls once a day. Keep a good smooth selvage on the laps. Drop the damper four times a day. Every week end take one lap head apart; clean the bearing oil holes; take feed rolls apart and clean and oil them; give the evener regulator a good cleaning; and do not allow too much oil grease to accumulate or the laps will show it and later it will appear in the roving. Also remember that oil costs money. Those little things must be looked after for when oil gets into yarn, cloth, hosiery and underwear, then there will be a kick on account of the loss as these materials must then go into seconds and if very bad, into waste.

In some mills in the picker room they have feeder and opener combined; breakers use the laps from the opener four into one; the intermediate turns four breaker laps into one; and four intermediate laps are used on the finisher to produce one finisher lap for carding. A good rule is to have the opener laps 2 ounces heavier per yard than the breaker laps; the breaker lap 1½ ounces heavier than the intermediate lap; and the intermediate 1 ounce heavier than the finisher lap.

It is a good plan when running the laps four into one to have the laps arranged on the aprons of the machines, first a half lap and then a full lap alternately. The weight is much evener on the apron when arranged in this way and it will feed more evenly so that better results come from the machines when laps are used in this form. The finisher lap should be weighed every lap. If a lap weighs forty pounds when standard weight, allow ½ pound each way as a limit. The overseer should weigh a yard of lap or see it weighed, every day from each machine.

If the machines are kept properly cleaned and oiled; the belts cleaned and dressed with a good belt dressing; and if they are set right for draft, the best of work will be produced. In replacing the laps it is very important that the laps meet each other. For a 15 ounce to the yard finisher lap, the beater should strike twenty-eight blows to every inch of cotton fed and make a 42-pound lap in 6½ minutes. In starting to make a lap the tender should not overlap the cotton in bunches on the lap roll as this will make an uneven lap. The amount of overlap should be just sufficient to prevent thin places in the finished lap.

## A SYSTEM FOR TEXTILE MILLS.

BY Z. F. C.

The systematic handling of a large number of mill operatives is one of the greatest problems that confronts the manager of a textile business. The system should be founded on the Golden Rule and should begin with the president and come on down the line to the operative. The superintendent should be patient with his foremen; if things go a little wrong, he should try and remedy them as soon as he can, and by doing so he will gain the confidence of all under his control; that is the point he wants to reach to be successful. He should show his overseers all the respect that is due them. The overseer in turn must be a man of grit; he must be firm, but kind; in fact he should be a daily example before his operatives, as they will watch him closely, and if they find him slack, they in turn will be slack. He should consider all things well before he makes a decision, but when he decides he must be firm. He must see that the work is kept in the best possible condition; the machines clean and the floor clean; and then the operatives will take an interest and keep themselves neat. The overseer should have a good second hand, one that wants to work himself up to a good position. Then he should see that he has every opportunity to learn, but that he does not abuse his authority and be overbearing to those under him. A carefully worked out system like this, when lived up to, will constantly tend to form a willing and contented body of operatives.

# NEW MACHINERY AND TRADE NOTES.

## THE TESTING OF YARNS AND CLOTH.

Spinners, manufacturers and jobbers more and more realize the value, the vital importance I might say, of correctly and thoroughly testing the fibers entering into the manufacture of yarns, the yarns themselves and the cloth which is woven from them.

For the spinner there is a test which he should not omit before placing the raw stock at the disposal of the carding department. This is the moisture or conditioning test, which the writer finds is not as yet given in this country the importance it deserves.

It is a well known fact that all vegetable or animal fibers used in the textile trade absorb more or less moisture under different atmospheric conditions of moisture and of temperature. A warm moist air being the most favorable condition for the absorption of humidity. Then also different qualities of the same variety of fibers will show varying hygrostaticity. This has led to many disputes over invoice weights, the buyer finding that the raw stock, for example, when checked up a few days after delivery lost too much weight. It was therefore deemed necessary to establish for each kind of fibers a standard or tolerance of moisture and to this end an international congress of deal-

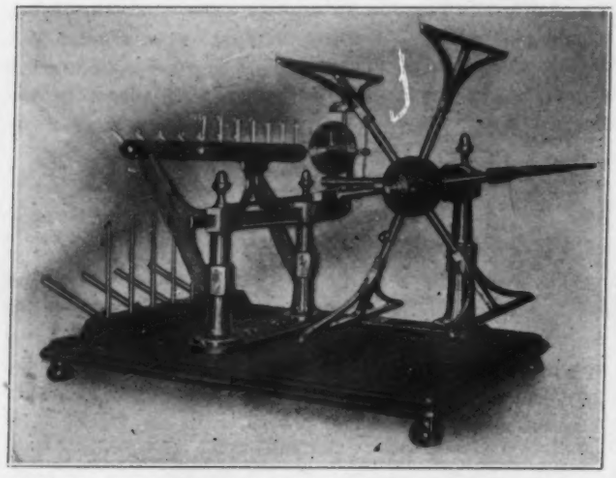

FIG. 1. SIZING REEL.

ers in raw stock, spinners and weavers met in Italy about 35 years ago and established the following tolerances based upon the broadest of tests, made under all kinds of climatic conditions.

Raw cotton and cotton yarn, 8½ per cent.
Carded wool and wool waste, 18¼ per cent.
Wool yarns, 17 per cent.
Yarn mixtures of wool and cotton, 10 per cent.
Yarn mixtures of wool and silk, 16 per cent.
Linen, raw material and yarns, 12 per cent.
Jute, raw material and yarns, 13¾ per cent.
Spun or schappe, raw and carded silk, 11 per cent.

The percentages noted being taken on the absolute dry weight of the fibers. Added to the latter, the fix or invoice weight is obtained. This of course holds good also for yarns and cloth. To obtain the absolute dry weight, a conditioning oven is used, which is supplied with a very sensitive scale and a thermometer to regulate the temperature, which is most suitable at 212 degrees Farenheit.

FIG. 2. *SIZING QUADRANT.*

Alfred Suter of 487 Broadway, New York City, textile engineer and specialist in testing apparatus has introduced such an oven which can be heated either with denaturated alkohol, steam, electricity, or gas.

The next test to which raw stock in the process of manufacture should be submitted, is in the roving or slubbing, special scales being devised for this purpose. Manufactured yarns should all be tested as to size, strength and elacticity, evenness, cleanness and twist, either single or in ply.

To determine the size of yarn, the standard length, etc., it has to be reeled off in a sizing reel of which Fig. 1 represents a type. The yarn can be taken either from the cops, bobbins, spools, cheeses, cones or skeins. The apparatus is supplied with a clock and registering device and signal attachment to inform the operator when the required length has been reached. 8 or 10 of the skeins thus produced are weighed separately on the sizing quadrant as illustrated in Fig. 2. This instrument will give directly the number of the yarn, it is therefore very quick. Its accuracy is secured by the suspension of the lever on a steel knife oscillating in agate sockets. To get the size of the single yarn in the case of twisted threads a certain allowance for

FIG. 3. DOUBLE ACTION TWIST MEASURER.

the taking up in length, caused by the twisting has to be made. This allowance is very easily ascertained on the take up registering device with which Mr. Suter has provided on his twist measurer. While untwisting the yarn this device will register in thirty seconds of an inch the elongation gained.

The illustration, Fig. 3, shows the double action twist measurer which untwists the yarns from both ends at the same time. Tests of 1 to 20 inches can be made and the regularity of the yarn and the fibers is inspected with magnifying glass attached to the twist measurer.

The evenness and cleanness test is made on an apparatus which has detachable black or white velvet covered aluminium board, upon which the yarn is wound in parallel even distances of 1-16 of an inch. Here all defects and commendable qualities are brought into view, and similar qualities of yarns can be easily compared one with another.

The strength and elasticity test is next in order. This test until recently has been made in skeins of 120 yards, but of late, on account of its unfairness, it being practically impossible to bring the strain to bear upon all threads of such a skein and with even force, this has been abandoned in favor of the single strand test. An average of 10 to 20 tests being generally made. One of the most modern and improved apparatus is illustrated in the accompanying illustration Fig. 4. In this apparatus the strain upon the yarn is automatically controlled by an oil tank and plunger which absorbs at the same time all vibrations, gives an even pull from beginning to the end of the test.

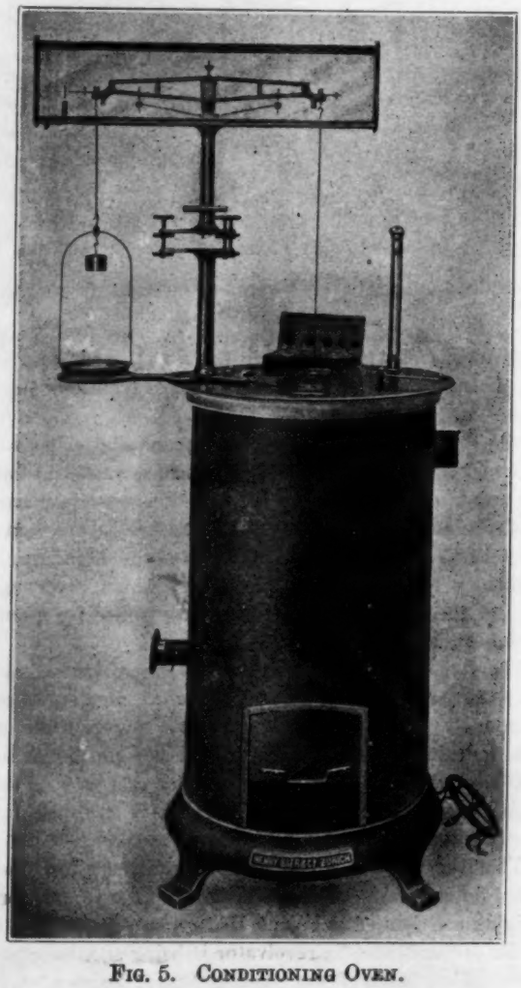

FIG. 5. CONDITIONING OVEN.

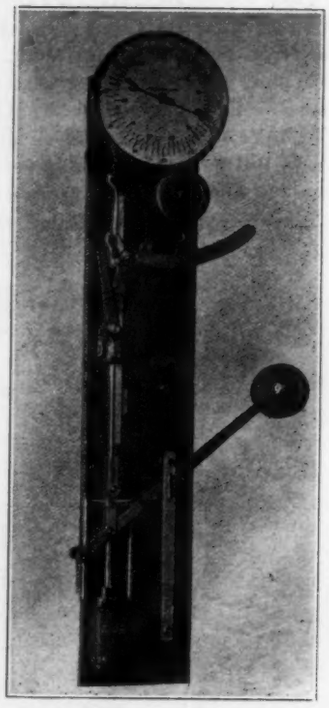

FIG. 4. STRENGTH AND ELASTICITY MEASURER.

These instruments are made with double strength scale for weak and for coarse threads, with resisting power up to 10 pounds. The elasticity is recorded in fractions of inches and percentage directly. For still coarser yarns or plies stronger apparatus is built according to requirements. Cloth is tested on a similar apparatus. Mr. Suter will be glad to supply additional information on any problem or apparatus relating to the testing of fibers, yarn and cloth.

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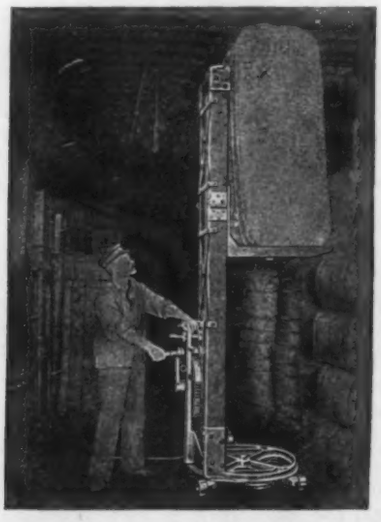
For the past thirteen years the STEEL HEDDLE MFG. CO., of Philadelphia, Pa., has been introducing their product among the cotton, wool, worsted and silk manufacturers in this country, Canada, England and Japan. Slow progress was made the first few years on account of the experimental stages necessary. The Southern manufacturers have been very skeptical and showed a great prejudice against the new flat steel heddle, but hard work and continuous great improvements on the heddle has conviuced even the most doubtful mill man that the time has come to employ the flat steel heddle in his mill. Gradually some of the leading concerns started to use them and the rest followed by degrees. However, good reasons were at the bottom of all the sales. Sample sets have been placed and given wonderful results from the start. Larger production, less seconds, easier handling in the way of changing the count to another weave, have proven real and valuable facts to the manufacturers. Today their mill is busy catering to the Southern trade. They argue that there is a convincing argument in the fact that in less than another year or two, at least two-thirds of all the Southern mills will use our flat steel heddle and with the best results.

---

F. W. Richardson, of High Point, N. C., representing the GEO. D. MAYO MCH. CO., was a recent and welcome visitor at the offices of COTTON. This company is the one that has recently become affiliated with SCOTT & WILLIAMS, INC. These companies maintain a general office at 201 Devonshire Street, Boston.

## METHOD OF INCREASING STOREROOM CAPACITY.

As from 25 to 50 per cent. of the storage capacity of most warehouse, store rooms, etc., is wasted by the unoccupied space next to the ceiling and by the large aisles that are necessary in order to handle and stack the goods, most warehouse owners will be interested in a new type of machine known as a "Revolvator," which has recently been perfected by the NEW YORK REVOLVING PORTABLE ELEVATOR Co.

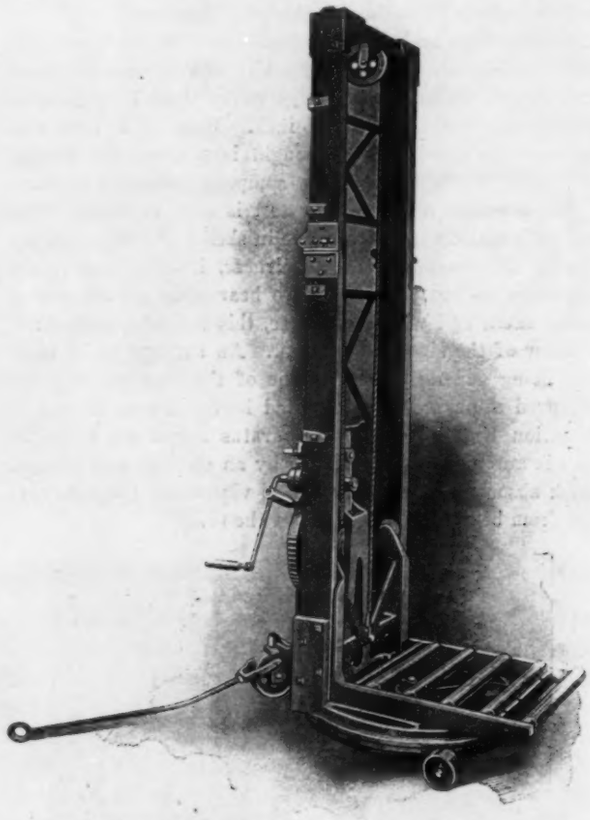


A REVOLVATOR IN USE FOR STACKING COTTON BALES IN A TEXTILE MILL WAREHOUSE.

The Revolvator is a portable tiering machine which can be used in any part of a warehouse but it differs from other types of tiering machines in that it has a revolving base. The great advantage due to the revolving base is that the platform of the machine can be pointed down an aisle and a cask, bale or box tipped over on the platform, then, after raising the box or bale to the desired height the machine can be swung around on its own center, and the box removed at either side of the aisle, or in back if so desired. The fact that the Revolvator can be unloaded from the rear makes it possible to stack a wareroom entirely solid leaving no aisles whatever.

Besides increasing the storage capacity of warehouses the revolvator also reduces the labor bill for it is stated that two men with a revolvator can stack as much material as five men using the old method of working boxes up by stages. It also enables laborers to handle much larger and heavier boxes than is possible otherwise. For instance, one man can easily raise a 1,500 to 2,000 pound bale up to the ceiling of any warehouse.

The Revolvator also eliminates breakage when fragile materials are handled inasmuch as each individual case is raised to the place to which it is to be stored and merely slipped off into the space waiting for it. In unloading the operations are reversed, that is, the box is slid on to the platform and slowly lowered to the floor. This does away with the usual method of bumping boxes from one stage to another.



THE REVOLVATOR WITH UPRIGHTS OPENED UP TO FULL HEIGHT.

The Revolvator consists of two uprights attached to the revolving base. The elevating platform is raised by means of a crank and gears. Two systems of gears are provided, one for high speed and the other for low. One man can easily handle bales up to 800 lbs. on the high gear and weights up to 1,500 lbs. on the low gear. In lowering, the speed of the descending platform is controlled by means of a band-brake.

The Revolvator rests on three wheels so that it can be easily moved from one part of the store-room to another. In order to prevent the revolvator from moving while under load, the third wheel is always turned at right angles to the other two when the machine is in place and as soon as the tongue used for moving the machine is dropped to the floor it automatically locks the wheels.

That the revolvator can be moved through low door or placed on elevators and taken from one floor to another, the uprights are jointed, allowing the upper part to fold over. At the present time the revolvator is being successfully used for handling bales of wool and cotton or boxes of finished

USE OF A REVOLVATOR FOR LOADING WAGONS.

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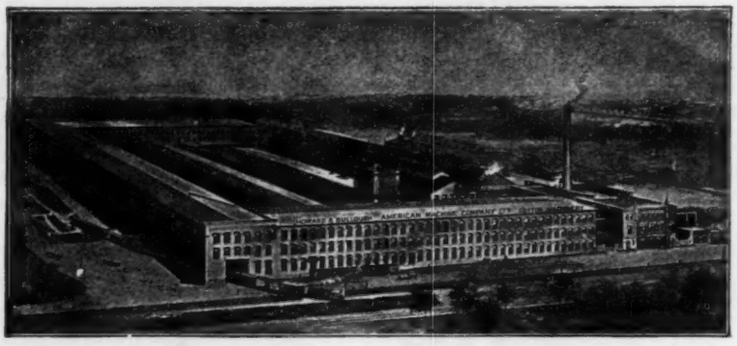
Southern Offices
814-816 Empire Bldg
Atlanta, Ga.

COTTON MACHINERY



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WE INVITE YOUR INVESTIGATION AND COMPARISON

material in textile mills; for handling rolls of paper and also bundles of sheet paper and cardboard in paper mills; binderies and print shops; for stacking barrels and casks in distilleries, breweries, paint factories, sugar refineries, etc., and is also extensively used for loading heavy cases and bales on wagons and trucks. The revolvator is built in any height up to 20 ft., and for handling any weight up to 1,500 lbs. Further particulars can be had by addressing the New York Revolving Portable Elevator Co., Jersey City, N. J.

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When preparing to put up steam or gas pipes, it is well to remember that a suitable pipe joint compound will assist to a great extent in making all joints absolutely tight. The A. WILHELM Co., of Reading, Pa., manufacturers of paint, colors and varnishes for the past 53 years, are putting on the market "Wilhelm Red Lead Pipe Joint Compound" which is always ready for use and makes a perfect lubricant for pipe joints.

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The Berlin Aniline Works of 215 Water street, New York, are sending to the trade a description of two new dyes. Under the name of Guinea Green GG they are introducing a new acid dye for wool, and under the name of Metachrome Yellow R. A. they are bringing out a somewhat greener shade than their older Metachrome Yellow R, but possessing the advantage of exhausting better when dyed with Metachrome mordant.

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One of the prime factors in stimulating the textile machinery trade has been the remodeling of the Harmony Mills of Cohoes, N. Y. It is now a Massachusetts corporation with Albert G. Duncan, treasurer, and Andrew Raeburn, assistant treasurer and every move made in remodeling the equipment has been made with the care that would be expected of such an organization. Recently an important decision was reached as to humidifying and heating. As a result, a contract was awarded to the G. M. PARKS Co., of Fitchburg, Mass., to install 1071 turbo-humidifiers combined with the air cleaning that usually accompanies this system; together with the Parks system of hot water heating.

Textile men are beginning to appreciate the advantages of uniform conditions in tempreature arising from the use of hot water heating systems that are now readily attainable and for that reason more likely to be secured.

This order of humidifiers makes an aggregate of 2,421 on this company's books to be installed in the near future. This aggregate includes installations for the Alta Vista Cotton Mills, Alta Vista, Va.; Fort Drummer Cotton Mills, Battleboro, Vt.; Hampton Co., East Hampton, Mass.; Mt. Vernon-Woodbury of the International Cotton Mills Corp., of Baltimore, Md.; Westervelt Mills, Greenville, S. C.; and the Harmony Mills, Cohoes, N. Y. The G. M. Parks Co., publish a little paper known as the *Fog Horn* which describes many of their installations in detail and takes up their work more intimately in a greater length than would be possible otherwise. A copy of the *Fog Horn* will be sent to any person stating his connection with the textile trade.

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*Mill News*, the interesting weekly for textile workers published in Charlotte, N. C., has established a review department which is receiving much favorable comment among mill operatives.

## WOMEN IN JAPANESE INDUSTRIES.

The following extract from the report of Consul George N. West, of Kobe, to the Bureau of Manufacturers, Department of Commerce and Labor, is reprinted from *Cotton Chats* for May, that popular little monthly published by the DRAPER CO., of Hopedale, Mass. The facts stated emphasize the situation outlined on page 345 under the heading, "The Japanese Invasion."

"An interesting statement has been made by the Director of the Industrial Bureau of Japan, which shows how far women are responsible for building up Japanese industries. This report shows that Japanese women's labor as an industrial factor is very great, as their influence is keenly felt in almost every industry.

"Commencing with the production of raw silk, which occupies over 50 per cent. of Japan's total export trade, female labor largely enters into the manufacture of habutae, cotton yarn, and other staples of export. The extensive employment of female labor may be due to its comparatively low price, but in many instances work can be done better and more effectively by women than by men. The percentage of women engaged in the industries of Japan is stated to be as follows as compared with men: Men employed, 34 per cent.; women employed, 66 per cent., showing that there are nearly twice as many women as men employed. There are usually fixed hours (12) as to the time for daily employment.

"In spinning raw silk, floss silk, cotton refining, weaving, knitting, and braid manufacture, there were employed a total of 373,284 persons in 1908, classified as follows: Males over 14 years of age, 40,789; under 14 years of age, 2,475; total number of males, 43,264. Females over 14 years of age, 296,424; females under 14 years of age, 33,596; total number of females, 330,020.

"The wages paid to males over 14 years of age ranged from 51 sen (25 cents) per day, the highest rate, to 30 sen (15 cents) per day. Males under 14 years of age received from 20 sen (10 cents) per day to as low as 12 sen (6 cents) per day.

"Females over 14 years of age received from 28 sen (14 cents) per day the highest, down to 20 sen (10 cents) per day. Females under 14 years of age received from 18 sen (9 cents) per day down to 10 sen (5 cents) per day. From this report it will be seen that the wages paid to factory operatives are very small indeed. This fact is also applicable to all other lines of industrial labor.

"It is not surprising, therefore, that Japan's foreign export trade has increased from $70,000,000 in 1891 to $450,000,000 in 1910, as stated by a well-known financier of Japan, the increase during 1910 over that of 1909 being given as 100,000,000 yen or $50,000,000. On the completion of the Panama Canal the trade of Japan with the United tates and northern Europe will undoubtedly be further increased."

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In case there is any difficulty with sizing or finishing, or when some improvement in this respect seems desirable, the ARABOL MFG. CO., 100 William St., New York, are the people to go to for help. Scientific specialization, long and extended experience, modern facilities in factory and laboratory enable them to meet any conditions. They are continually adding to the staples that have made them familiar with the textile trade.

## AN INTERESTING DEVELOPMENT IN KNITTING MACHINES.

There are three big steps—or jumps—in the progress of knitting, from primitive times to the present. First, the hand knitting, with a pointed stick to draw the new loop through the previously formed one; next, the springbeard needle with its accessories for making, landing, and casting off the stitch; and finally, the latch needle, which has only to be fed and reciprocated to enable it to form the stitch. It is the most self-contained knitting device ever produced.

Indeed, Matthew Townsend has in that simple little latch, a bigger monument than money could buy; a more enduring one than stone; and one which will, undoubtedly, increase in importance far beyond the comprehension of this generation. Inventions so wonderful must of necessity be reserved for the favored few. The less favored many should be satisfied if their ability enables them to contribute to the success of the great ideas. That is the privilege and opportunity of those who design and make the mechanism which operates the latch needle. In this less illustrious, but wider field, there are problems of importance, such as feeding the yarn with greater uniformity; improving the trueness of the needle line, and the accuracy of the needle spacing; increasing the durability of the working surfaces; and removing the finished fabric with proper and uniform tension.

As remarkable as it may seem, these last and important problems—proper and uniform cloth tension at the needles—have never been practically solved, until the present time. THE WILDMAN MFG. CO., of Norristown, Pa., is the developer of the simple and efficient device which solves these two problems as well as many others not connected with the actual knitting. Some will say—a new take-up. No! the trouble lay between the take-up and the needles. It was the obstruction to the cloth delivery caused by the lugs which keep the cylinder and dial in unison. It would make a long story to tell all of the losses, damages, and annoyances, caused by these two "undesirable citizens," skulking in the recesses of the machine, pinching the fabric all the time, sometimes stopping it entirely at a bunch or welt, and frequently tearing holes still larger.

The Wildman dogless attachment completely cures these ills by cutting out the dogs entirely. No more pinching, dragging, pulling, tearing—no more needed adjustments undone for the difficulty of doing them, for the dogless attachment is adjusted at the shop, and needs no readjustment for change of yarn or stitch. Moreover, even then, that adjustment is perfectly accessible, accurate, and sure.

It is a simple but interestingly ingenious device, resting on the cross bar, steadied by the bobbin-stand rod, and holding the center stud stationary, yet allowing the yarn to pass around the stud. The dial is fastened to the center stud, so that its circular position is mechanically controlled. The motion of the dial cap is supplied through a link connecting it and the cam ring. This attachment is furnished for slight extra cost on new Wildman ribbers up to 9 inches in diameter, when specially ordered.

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THE CROCKER-WHEELER CO., of Ampere, N. J., are sending out a folder describing their "Remek" transformers. This pamphlet takes up the subject of transformers with a considerable detail and will be of great interest to users of same. Copies of this pamphlet will be mailed to interested parties upon application to the manufacturers.

"As the Albatross flies"

# The Evidence is All Around You

THE progressive cotton men have been looking for a commercial motor-driven truck—they've placed the emphasis on "Commercial"—wanted it understood that they were looking for a practical, dependable, durable motor vehicle—in fact intended when the right truck came along to adopt it in their business. The evidence that such trucks are already here is all around you—White motor trucks are solving some of the largest delivery problems for such concerns as W. & J. Sloan, or the Standard Oil Company of New York; The Joseph Horne Company and the McCreery Company of Pittsburg, The Cleveland-Akron Bag Company, The Marshall Field Company of Chicago, and the Auto Delivery Company of Portland, Oregon. These are but a few of the largest users in the world who have bought White trucks.

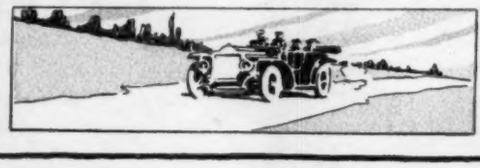
# The Verdict is White Trucks

THE verdict must always be in favor of White trucks if the evidence is submitted—in fact the decisions are beginning to come in in the cotton industry—The Cheney Bros. and the Skenandoa Mills being prominent examples. The evidence submitted to these purchasers is the story of performance—a performance made possible by the design of the engine—its simplicity—its accessibility. Performance that is made possible by the materials used, which are the best modern science has produced. The trucks come in three sizes, with the engine standardized in all types to simplify your mechanical problem. The White line consequently, will solve any delivery problem, meeting any special or unusual requirements, and do it most economically.

LET US SEND OUR LATEST CATALOGUE AND THE TESTIMONIALS OF THE WORLD'S LARGEST USERS.

## The White Company

**805 East 79th Street, Cleveland, Ohio**



# The
# New Bedford Textile School

Has under construction an addition to its present building, 112 feet x 108 feet three stories high with a deep basement, which will be complete for the fall term of 1911.

At that time the school will offer to young men entering the cotton textile industry, unsurpassed facilities for acquiring a thorough technical knowledge of the business.

Students have the advantage of pursuing their studies in the largest fine cotton goods manufacturing center and the fastest growing mill city in this country.

The following courses are offered:

1. Cotton Manufacturing.
II. Designing.
III. Chemistry and Dyeing.
IV. Seamless Hosiery Knitting.
V. Latch Needle Underwear Knitting.

Mechanics and Shop Practice given in all courses.

Send for free catalogue. Address

**New Bedford Textile School,**

**New Bedford, Massachusetts.**


## EXPERTS STUDY RAMBLER METHODS.

Expert engineers in the leading universities of the country frequently draw upon the Rambler factory organization for ideas in the instruction of students in advanced automobile engineering methods. Sixty students of the University of Wisconsin and a body of men from the Central Y. M. C. A. of Chicago recently visited the big Rambler factory, at Kenosha, to study those methods of accuracy, precision and skill by which Rambler cars are made. The students were the guests of Charles T. Jeffery, president of The Thomas B. Jeffery Co. They learned much of scientific engine testing in the Rambler testing department, where seventeen motors are tested on seventeen separate stands at one time and in each of the many departments they made careful study of those methods of extreme care practiced by Rambler experts in determining the quality and accuracy of every Rambler part. In a few of the middle western universities the students in the engineering department have had an opportunity to study at first hand Rambler manufacturing methods, working upon Rambler chasses loaned to the institutions for this purpose.

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EUGEN C. ANDRES & Co., of 127 Federal St., Boston, Mass., report mail advices from Alexandria, Egypt, to the effect that the crop conditions there seem to be about a fortnight late, but this is not considered detrimental. Very little resowing was done this year. The area planted in Yonovich is larger than it was the previous season. Both Nebari and Abassi have been planted more extensively. From this it will be seen that all specialties have been planted in excess of last year to the detriment of Afifi which will become comparatively scarce and which will undoubtedly be replaced by Nebari.

THE NOISLESS WHEEL & TRUCK CO., incorporated under the laws of Georgia with a capital of $100,000, has been formed to take over the manufacture of the noiseless wheel patented by C. B. Morris and the Hercules Truck, formerly made by the United States Truck Co., and will succeed this company. A factory has been established at Cedartown, Ga., for the manufacture of wheels and trucks of all kinds and sizes for use in textile mills. Mr. Morris will be the general manager in charge of the manufacturing at Cedar town, with a selling agency at Philadelphia in charge of Alfred Barrach.

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The eyes of the marine world have been turned during the past week to a daring adventure of three amateur yachtsmen. On June 10th three hardy sailors put out from Providence, R. I., bound for Rome, Italy. Their ship was a 25 ft. yawl, and seldom, if ever, in the history of marintine adventure has such a trip as this been attempted. Naturally the fittings of this boat were most carefully looked after and it is with pardonable pride that the COLUMBIAN ROPE CO., of Auburn, N. Y., is pointing to the fact that their rope was selected for the running rigging. It is indeed a high compliment to the quality of columbian rope in having this rope selected above all others

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The Union Gas & Electric Co., of Cincinnati has just placed with the GENERAL ELECTRIC CO., at Schenectady, N. Y., the largest single order for arc lamps ever received by a manufacturer. This order calls for 6,000 of the latest type of series luminous arc lamps, together with a complete mercury arc rectifier station equipment of 9,000 lamps capacity. This order, twice as large as any previous lamp order, and reaching a total value close to half a million dollars, is highly significant of the rapidly increasing popularity of this type of lamp. And, when the six thousand new lamps are installed in Cincinnati, that city will rank with Boston, St. Louis, Toledo, Montreal and Baltimore, which use the same type of lamps and are well recognized as the foremost among the best lighted cities in this country.

## NEW PUBLICATIONS.

THE CHEMISTRY OF THE COAL-TAR DYES. By Irving W. Fay, Ph. D., (Berlin), professor of chemistry Polytechnic Institute, Brooklyn, N. Y. 467 pages. Price, $4.00. Published by the D. Van Nostrand Co., New York.

This book is intended for those students and dyers who have a good knowledge of general chemistry and some knowledge of organic chemistry. The object is to present briefly, the origin and history of coal-tar production and a discussion of the intermediate products between the coal-tar and the dyes themselves. The methods of making the dyes are taken up and this is followed by a study of the relations of the individual dyes themselves, to one another in the same class. The use of mordants and the character of the unions between the dye and animal and vegitable fibers are also included. A few manufacturing processes are introduced here and there in detail, to give clear conceptions of this phase of the subject. Some practical experience to assist in comprehending the subject is made possible by a course of experiments, the performance of which aids in vivifying this difficult and interesting subject. To those interested in advanced studies of the dyers art, this book will prove of great interest and value and be a veritable mine of information.